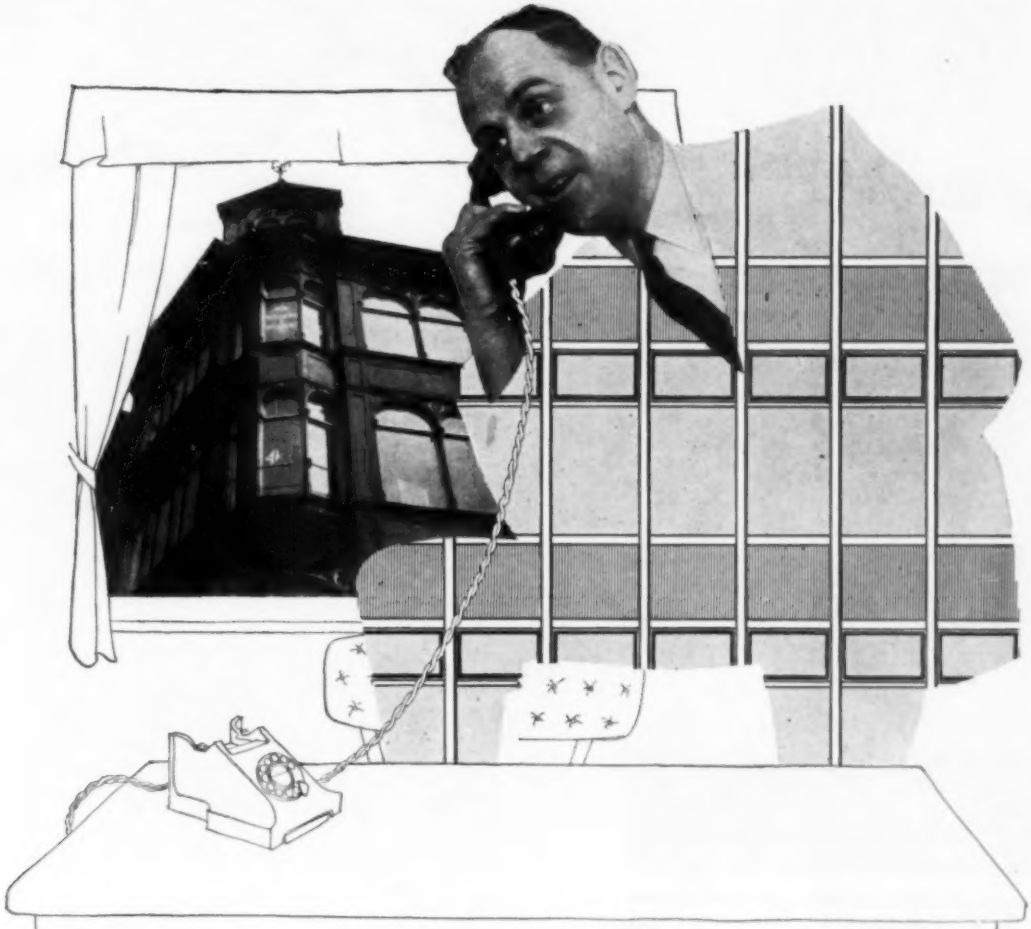
THE ARCHITECT & BUILDING NEWS

9 JUNE 1955 · VOL. 207 · NO. 23 · ONE SHILLING WEEKLY

- MUSIC STUDIO AT HIGHGATE
- PREFABRICATED FLATS IN OSLO
- CURRENT MEASURED RATES

PUBLISHED IN LONDON SINCE 1854



Bob Leech—between the old and the new

"Wallspan" says Mr. Leech*, our Liverpool Area Manager, "is going well. But the idea isn't new to Liverpool." And he points out that the Williams & Williams office is housed in a building with a century-old curtain walling system, forerunner of Wallspan, far heavier, more clumsy and ornate, but still "on the right line". Bob Leech is a quiet, pleasant man with that air of inner confidence anyone can acquire by spending the early years of his life amid the rough and tumble of the R.A.F. His area is North Wales to Barrow-in-Furness. His team of representatives, draughtsmen, estimators and window fixers is skilled and energetic. Bob Leech drives them hard in giving service to the architects in his area.

* MR. R. H. LEECH, WILLIAMS & WILLIAMS LTD
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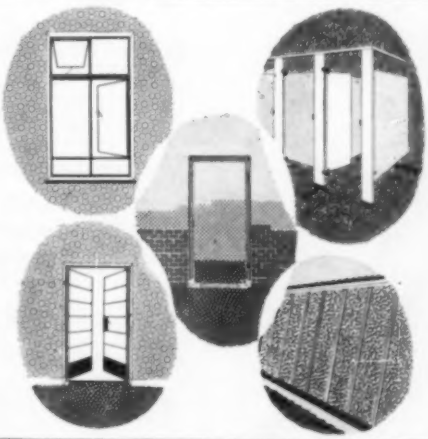

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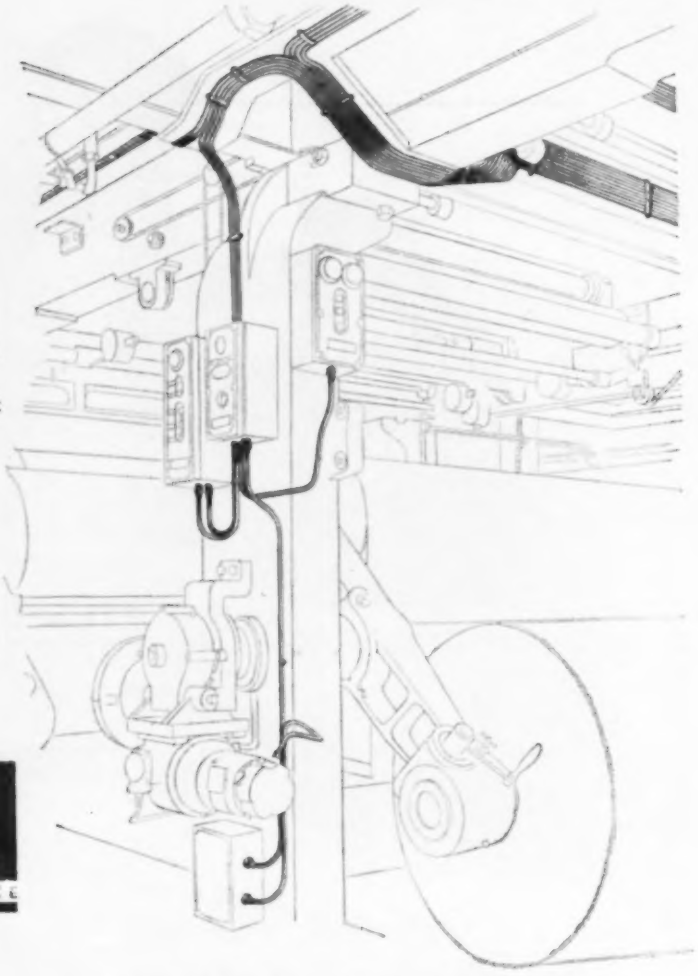

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A non-technical description of "Pyrotenax" is given in our booklet, "Current Carrying". For the technical man, "Technical Data" is available— write for your copy.

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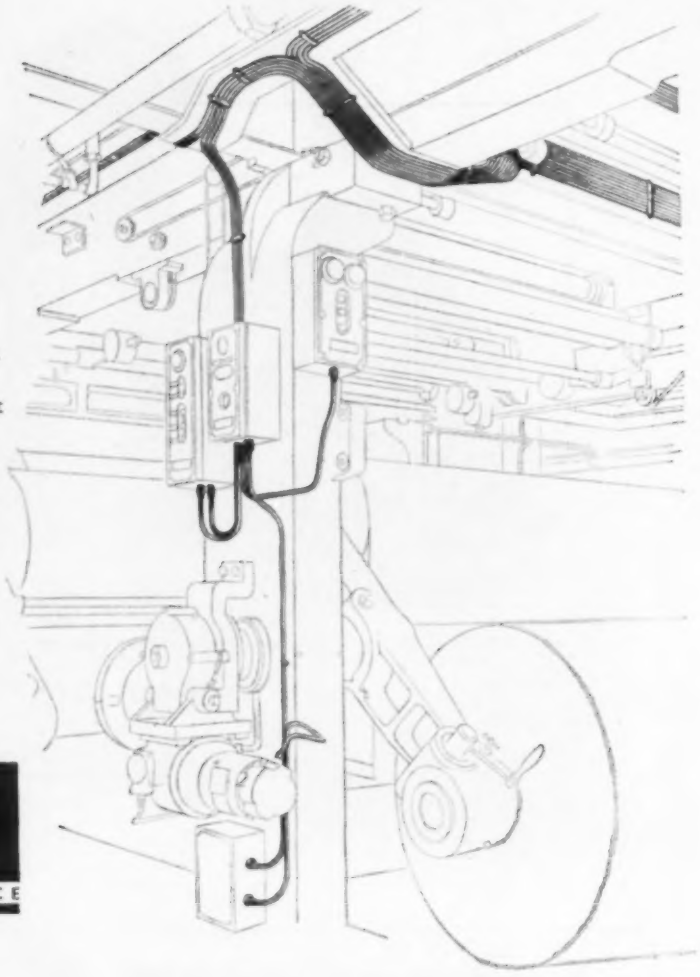

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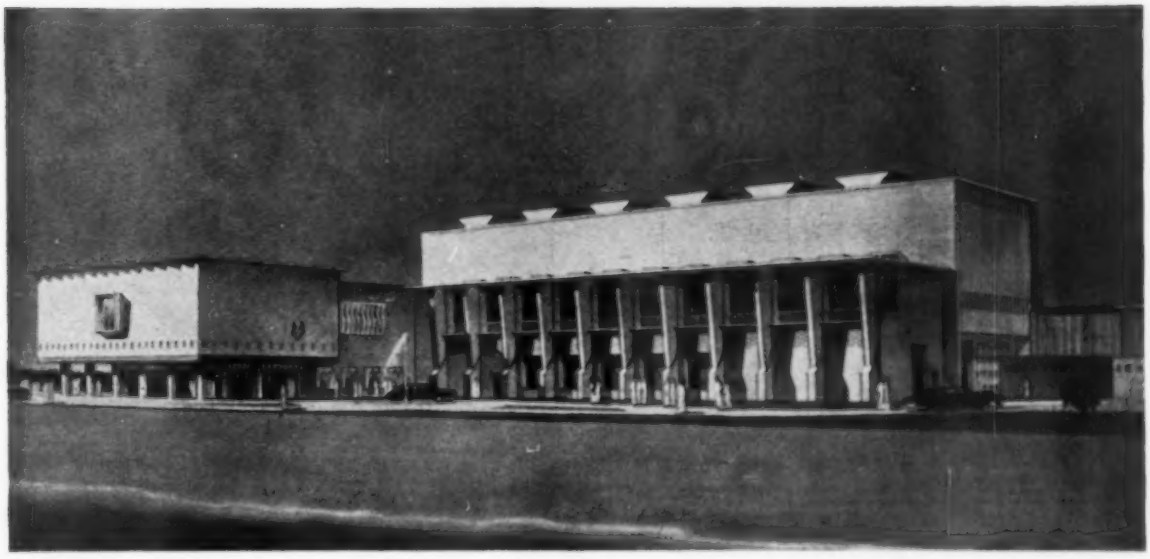

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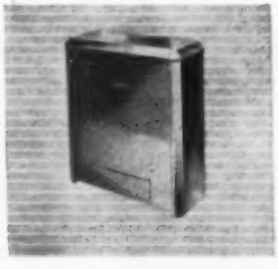

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B

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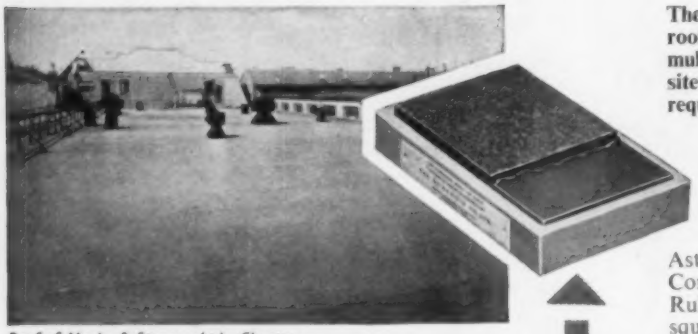

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Architect : Norman Jones, Son & Rigby, Southport.

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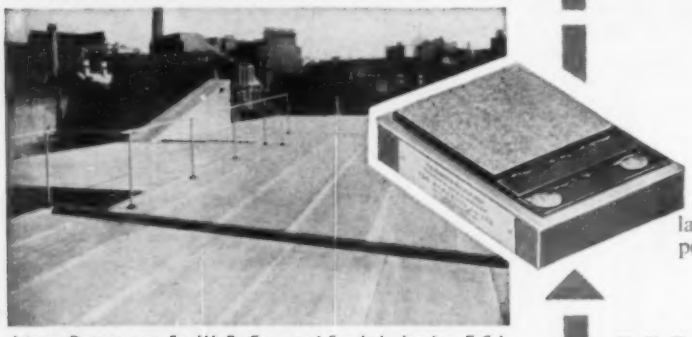

Joinery Department for W. R. Crow and Son Ltd., London, E.C.1.
Building Surveyor : C. G. Eaglen & Son.

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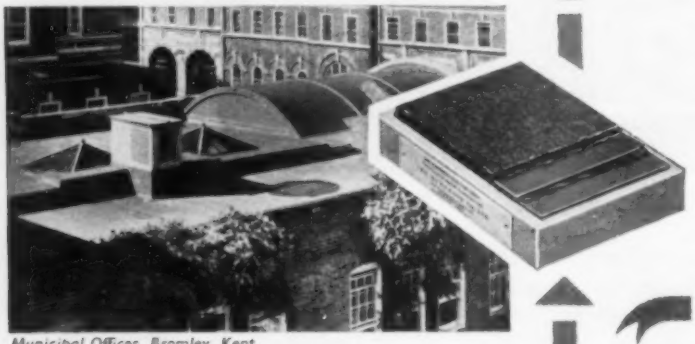

Municipal Offices, Bromley, Kent.
Borough Engineer : H. Cliffe, B.Sc. (Eng.).

3-layers on concrete :
(Specification J.2)

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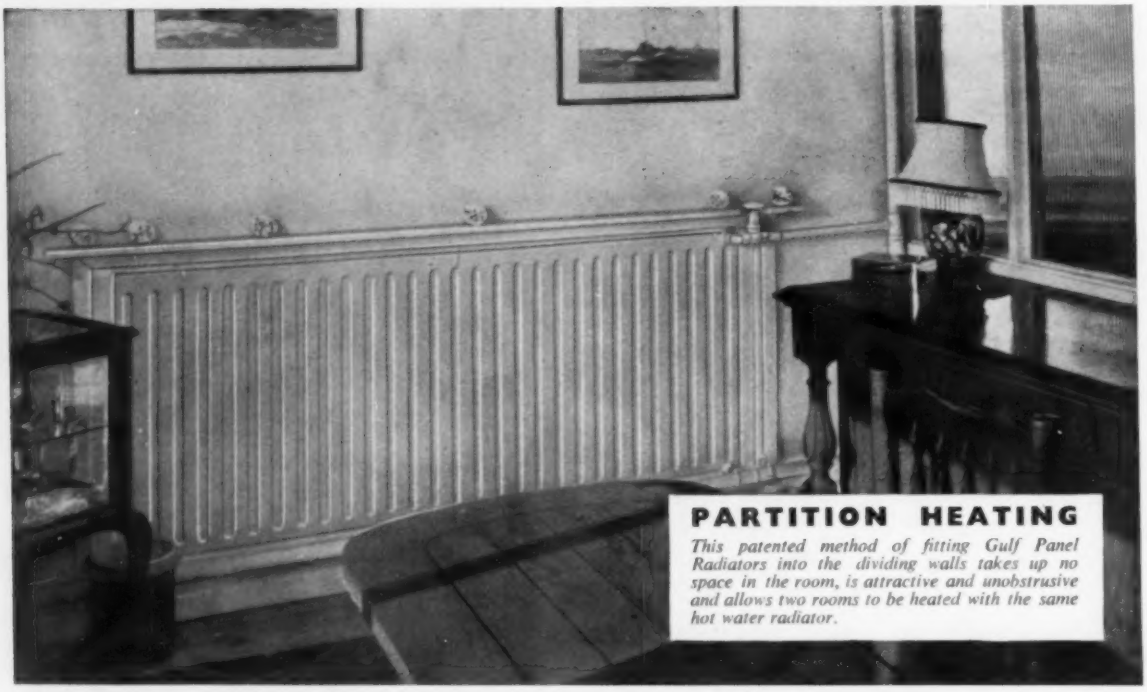

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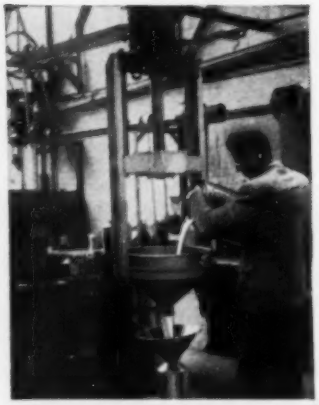

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Vol. 207 No. 23

THE ARCHITECT & BUILDING NEWS

9 June 1955

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ATOMS FOR PEACE

THE U.S. Information Service travelling exhibition, consisting of five trailer caravans, has come to London with President Eisenhower's message: "The Atomic Age has moved forward at such a pace that every citizen of the world should have some comprehension at least in comparative terms, of the extent of this development, of the utmost significance to every one of us."

It was not thought necessary to send out travelling exhibitions to spread the news of Edison's inventions, Henry Ford's organizational discoveries or Einstein's formulae, all of which nevertheless spread throughout the world and transformed it.

To-day we have dinned into us that the forces of destruction can be diverted to constructive purposes if only—if only what? The ordinary citizen may well feel that the decision rests with the few on the summit rather than with the many in the traffic jam. Although it is by no means clear what advantage the trailers with their paraphernalia of loudspeakers, projectors and slogans have over the more effectual and less confusing media of the cinema and the television set, the U.S. Information Service exhibition carries the most exciting news imaginable, the XXth Century magic of Science. The potential and actual advances in industry, medicine and agriculture are outlined in various ways, and there is no space here to mention more than one or two of some relevance to the building industry.

By introducing radio iodine into a pipe buried under concrete it is possible to detect the actual point of any leakage.

The levels of liquids or gases in closed tanks can be controlled and recorded by radio-active floats on the inside which activate Geiger counters on the outside.

Thickness gauges using radio isotopes are in use to indicate the thickness of moving sheets of materials such as sheet metal, rubber or plastic, and for gauging the thickness of zinc coatings on steel.

The exact age of prehistoric objects up to 30,000 years old can be determined with some exactness, and we now know that Stonehenge is 3,800 years old.

The "Promise of the Atom" will determine the kind of world we have to build for, and keep pace with. Are we sufficiently preparing for it in the building industry?

AL THAT GLISTERS

It is difficult to believe that Aluminium is a hundred years old. In *The First Century of Aluminium*, Dr. E. G. West has written a fascinating account of "Silver from Clay" as it was called when first shown in public at the 1855 Paris Exposition. Charles Dickens confidently predicted that the word aluminium (or aluminum) would never catch on, "it must adopt some short or vernacular title."

Dr. West himself has proved a more trustworthy prophet. In an article in this journal in 1952, he wrote "Aluminium and its alloys have been used in the past by architects chiefly as a means of decoration . . . There are, however, numerous other applications in buildings of all types, and during the war a great deal of information has been obtained from aircraft manufacture which will be of great value to architects when reconstruction problems are considered."

In 1897 a prefabricated house was invented which weighed 150lb complete with bed, stove and cooking utensils, aimed to appeal to Klondyke gold diggers. After the last war 55,000 aluminium bungalows were prefabricated to relieve the housing shortage, while, as everyone knows, in the States 30-storey buildings clad with aluminium have been erected.

The Centenary Exhibition on the South Bank is a dazzling show. Visitors should, however, spare a moment to glance at this material where used in the Festival Hall, in order to see how necessary it is that every effort should be made to clear the atmosphere of corrosive pollution.

EVENTS AND COMMENTS

THE RAILWAY STRIKE

Ignoring the great damage being done to our national economy and the great inconvenience being caused to many thousands of people, it is interesting to find that London traffic is flowing much more often and much more smoothly. I am told that this is because more cars are being obliged to park farther out. Whose cars? I have, during the last week, motored in and out of London several times but I have never been invited by word or sign to park short of my destination. The radio has told us of great police plans and parking zones. There are certainly far more police about who are interested in helping traffic along and, furthermore, traffic in general seems to be far less tiresome than before the strike. I hope very much that lessons being learned now will not be forgotten when the trains start running again. One of the lessons, probably already well known, is that we need far more police, for regulars and reservists are having to work a 12-hour day to cope with the situation.

It is interesting also to think of the change in the lives of people whose houses back on to a busy suburban railway line. I refer to the type of place where conversation is automatically suspended every half-minute because of the noise. Do these people suffer in silence or will they suffer more when the trains return?

PETER SHEPHEARD ON THE THIRD

There was a time when this gentle architect naturalist would not have said boo to one of his own geese. This was never more than a natural diffidence, for he has always been tough inside. It is possible that his years of experience on the R.I.B.A. and A.A. Councils have exasperated him to such an extent that he can no longer leave the hitting-out to other people. Whatever the causes of the change, Mr. Shepheard's talk in the Third Programme on Whit Sunday on Landscape in the Town was admirable both as general instruction and as a warning against the horrors that are being perpetrated all round us in the name of beauty. Most terrifying was Mr. Shepheard's remark that a tenth of all London's large forest trees are at present being felled annually. Among the other bad things he mentioned the loss of the Elms in the Royal Parks and particularly in the Broad Walk, the gardens round advertising hoardings, Golden Square—and by inference many other open spaces left to the Borough Engineer to design. I hope we shall find the talk in *The Listener*.

THE NEW CANTERBURY

I hear, quite independently, that Mr. Shepheard is to design the small garden at the foot of the tower to St. George's Church, Canterbury. The church was destroyed but the tower has been preserved and forms the centrepiece of a small pedestrian shopping area. The buildings are nearly finished and the group looks most promising. The faces of the church clock, which stopped during the raid, have been restored and new machinery has been provided.

The new Canterbury generally is coming along very well indeed but it must be very disheartening for the City Architect to be constantly attacked by a very vociferous and ill-informed section of citizens who would have preferred something else. Exactly what is difficult to discover, for these people appear only to know what they dislike. In conversation with one of the most rabid opponents recently I found that his main complaint was that there were no gable ends.

Of the fairly large number of buildings so far erected in the main street, the majority are contemporary. Here and there an attempt has been made to put a Georgian top over the plate glass. Here and there, too, there are some rather unskilful essays in modern architecture. The standard on the whole is high, with Robert Paine & Partners grocery shop as the best building so far.

THE P.R.A. AND THE PYGMIES

No one will ever be able to say that Professor Richardson did not make full use of his time as President of the Royal Academy. His theme is, however, already becoming boring. We are on the verge of a great age of architecture; the public is advancing in taste; most architects are pygmies and the Festival of Britain was the root of all evil. The Professor foresees a revival of Hellenic influence in the arts and the decline of Modernism.

For many years the Professor has been a lovable figure of fun in the profession. He has designed some distinguished buildings, his lectures on the history of architecture will never be forgotten by those who have attended them, and he has a wonderful collection of lovely things. But his outpourings on the state of architecture should be reserved for the profession, where they can be treated on their merits. He is doing untold harm to architecture and to the profession by his senseless and destructive criticism which often appears to be done for the benefit of the Press and to obtain an inexpensive laugh. The Professor's next sally may be expected at the L.C.C. Central School of Arts and Crafts, where he is to present diplomas and open the exhibition on June 16.

THE LONDON SOCIETY OF PRIVATE ARCHITECTS

On another page you will discover a letter announcing the formation of this society as the result of a unanimous vote at a meeting held on May 2. We are not told how many persons attended this meeting. Mr. S. H. Statham, who was one of those who signed the recent circular letter to architects in private practice, and who has signed the present letter, was elected chairman.

I have lain pretty low over this and other recent professional controversies, but I feel strongly that the R.I.B.A. is the proper body for dealing with all professional grievances and I would not for a moment support the new society or any other body which set itself up in opposition.

Mr. Statham has attacked salaried architecture in a letter to *The Times* and has been smartly rebuffed at some length by the leader of the L.C.C. Mr. Statham has ventured on very dangerous ground by taking his not at all clearly defined squabble to the pages of *The Times*.

There are, I know, a number of causes for the dissatisfaction of private architects with the policies of some official architects' departments, but the R.I.B.A. is the body which must deal with them, not the L.S.P.A.

What with all this and the fact that the I.A.A.S. has

formed the "Architects and Surveyors Car Club," I am quite breathless, my dear.

IN AFRIKAANS, PLEASE

I hear that British- (or do I mean English-) speaking architects in South Africa are seriously upset by a recent Transvaal ruling that all contract documents for Government building work must be in Afrikaans. Hitherto such documents could be submitted in English or Afrikaans, but in practice they have been almost exclusively in English.

Most building contractors have only English-speaking staffs and as the industry is very short of men it seems unlikely that contractors will be able to provide a bi-lingual service without considerable difficulty.

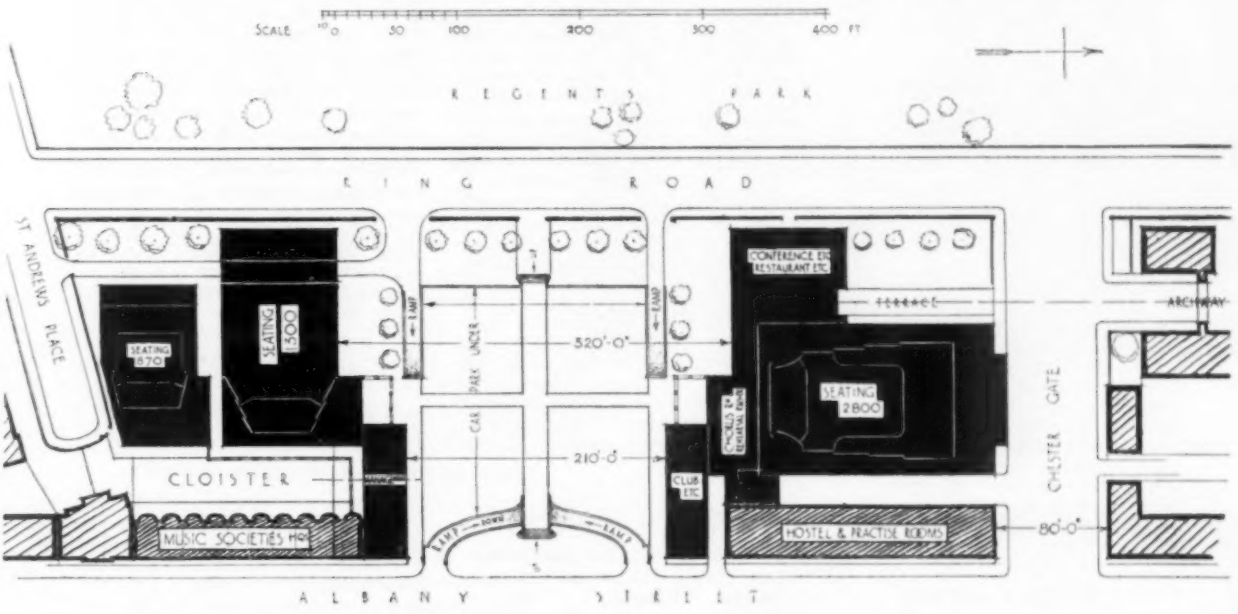
Some people see the new regulation as a direct blow at the English-speaking section of the community. It is pointed out that the Afrikaans' vocabulary is very weak in building terms.

H 5 5

Doubtless many students' parties have already been organized to visit the Hälzingborg exhibition. You may, however, be interested to hear that the party organized by the Leicester College of Art has vacancies. Full particulars can be obtained from Mrs. O. Ford at the School of Architecture, 1, Newarke Street, Leicester. The trip lasts from July 10 to 26, and will cost somewhere about £38 all found.

ABNER

A committee consisting of Professor Robbins, Sir Adrian Boult, Sir Russell Kettle, Mr. Norman Tucker and Mr. W. E. Williams, which was appointed by the Chancellor of the Exchequer in 1954 to advise on the possibility of building a new and larger Queen's Hall, has recommended that the idea should be dropped, and that the London Society's scheme for a Music Centre in Regent's Park should be brought to life as soon as a start can be made. The sketch plan below of the London Society's proposed Music Centre was prepared by Hope Bagenal, F.R.I.B.A., and is reprinted from A. & B. N. 20.2.47



NEWS OF THE WEEK

Kidbrooke School Opening

The Countess Mountbatten of Burma, C.I., G.C.V.O., G.B.E., has kindly consented to officiate at the formal opening of Kidbrooke School on the afternoon of Wednesday, June 15. The chairman of the London County Council, Mr. Norman Prichard, M.Sc., J.P., will preside at the ceremony.

Nordic Building Congress

The Seventh Nordic Building Congress opened in Helsinki, Finland, on June 2. In connection with the Congress the Finns have organized a "Build Rationally" exhibition, which concentrates on the themes of "element building" and the industrialization of building production—as well as a special exhibition dedicated to the work of Eliel Saarinen.

Owing to the A.S.L.E.F. strike the Post Office imposed a weight limitation of 8oz on periodicals, to meet which it was unfortunately necessary to reduce the weight of the A. & B.N. by omitting four pages which included the detail sheet. Until the strike is settled we regret that similar cuts may have to be made.

News in Brief

Twickenham Council has given planning permission for seven bungalows to be built on Eel Pie Island.

Mr. Basil Spence has flown to Jerusalem with a partner in the firm of Freeman, Fox & Partners, to inspect the Church of the Holy Sepulchre and make a report on the measures necessary to preserve the structure.

The competition for the design of a stand for the National Coal Board at this year's Building Exhibition has been won by Mr. D. E. Wright, L.R.I.B.A. He receives £50 and his design will be carried out.

At the Royal Institution on June 2, Sir Hugh Casson gave an account of his trip to Peking in 1954 as a member of a cultural delegation from Britain which was invited to China as guests of the Chinese Government.

Sir Hugh illustrated his lecture by making quick sketches of various subjects.

The Representation of Salaried Architects

The following statement has been received from the Association of Building Technicians:

The A.B.T. invites architects and architectural assistants to an open meeting at the Building Centre, Store Street, Tottenham Court Road, W.C.1, on Thursday, June 16, at 6.0 p.m., when the "Representation of Salaried Architects" will be discussed.

It has already been clearly demonstrated that salaried architects feel the need of an organization to represent them in all salary negotiations.

The recent A.G.M. of the R.I.B.A., however, showed that there is not nearly the same unanimity as to the kind of organization required.

This meeting will provide ample opportunity for all points of view to be put. Speakers at the recent A.G.M. of the R.I.B.A. have accepted invitations to speak.

Manhattan Development Competition

Sponsor: *U.S.A. To-morrow*, magazine of the Industrial Development Institute of America. Subject: General Plan to Redevelop and Improve Manhattan's Central Commercial District. Prizes in dollars: 1st, 5,000; 2nd, 2,500; 3rd, 1,500; 4th, 1,000. Jury: Charles Abrams, Housing Consultant to U.N., etc.; Professor Percival Goodman, Columbia University; Jose Luis Sert, Harvard University; William W. Wurster, U. of California; and Maurice E. Rotival, Professional Adviser. The competition has the approval of the American Institute of Architects, and is open to architects, town planners, engineers and students. Closing date for entries: September 30, 1955.

The address of *U.S.A. To-morrow* is: 210, Fifth Avenue, New York, 10, N.Y.

I.A.A.S. Car Club

A club, sponsored by the I.A.A.S. for all those architects and surveyors interested in motor cars, has been formed and is to be known as "The Architects and Surveyors Car Club."

Those interested should communicate with Barrie Meekins, Esq., A.R.I.C.S., 20, Balcombe Street, Dorset Square, St. Marylebone, N.W.1, who will forward particulars upon request.

R.I.A.S.

At the A.G.M. of the Royal Incorporation of Architects in Scotland on June 3, Mr. William McCrae, D.A. (Glas.), F.R.I.B.A., was elected President for the coming year.

EXHIBITION

June 8 to June 15. Glasgow Building Machinery Exhibition, organized by the Ministry of Works, on the Queenslie Industrial Estate, Glasgow.

APPOINTMENTS

Mr. Leslie N. Fraser, M.Eng., A.M.T.P.I., A.M.I.C.E., has been appointed Deputy County Planning Adviser to Essex County Council at a salary of £1,833 rising to £2,166. Mr. Fraser is at present employed by Lancashire County Council Planning Department and was previously with the Cornwall County Council. There was a short leet of eight.

Mr. Phipps Turnbull, T.D., A.R.I.B.A., A.M.T.P.I., has been appointed Deputy County Planning Officer to Surrey County Council at a salary of £1,517 rising to £1,780. Mr. Turnbull is at present with Hertford County Planning Department and was previously with Fife County Council Planning Department. There was a short leet of six.

ANNOUNCEMENTS

Messrs. Raglan Squire and Partners, Consultants of London, Rangoon and Baghdad, have been commissioned to prepare a Town Planning scheme for the cities of Mosul and Nineveh, Iraq.

Peter Dunham, Widdup & Harrison, chartered architects, have opened a London office at 29, Bedford Square, W.C.1. Telephone No. Museum 6575.

Hammett & Norton, Chartered Architects, announce that their telephone number has been changed from Grosvenor 5987-8 to Regent 1058-1059-1050.

PARTNERSHIP

Mr. Cecil C. Handisyde is pleased to announce that he has taken into partnership Mr. Brian Taylor. The practice will be continued from 68, Great Russell Street, W.C.1, under the title Handisyde and Taylor, A/A.R.I.B.A.

COMING EVENTS

The Design and Industries Association

June 14 at 12.30 to 2.30 p.m. Luncheon Meeting. Talk by F. C. Hooper, Managing Director, Schweppes, Ltd., on "Business as Patron of the Arts, at the Royal Society, Burlington House, Piccadilly, W.1.

Royal Institute of British Architects

June 14 at 6 p.m. Council Election Results. "Sociology and Architecture," by Professor Charles Madge, at 66, Portland Place, W.1.

The Architectural Association

June 16 at 6.15 p.m. Talk by Sergei Kadleigh on "New Barbican"—talk and film. Organized by the Students' Committee. At 34, Bedford Square, W.C.1.

The Royal Institution of Chartered Surveyors

June 16. A Conference of Quantity Surveyor members of the Royal Institution of Chartered Surveyors. At the Institution of Civil Engineers, Great George Street, S.W.1.

CORRESPONDENCE

Pre-tender Planning

To the Editor of A. & B. N.

Sir,—Abner must really read the *Architect and Building News*. Talking of pre-tender planning in reporting on our recent luncheon to the Lord Mayor, he writes that "as far as I know the claims made for it before the event have never been compared with the results obtained."

Yet in the *Architect and Buliding News* of November 4 last, a Past President of the L.M.B.A. to whom I referred in my speech of welcome to the Lord Mayor, did just that. I quote the relevant paragraph, and I commend the rest of the article to Abner's careful attention:—

"Our new offices are the third job we have carried out in the recent past under these same circumstances and it may be pertinent if we say that our considered views are that the practical benefits which can be made to accrue are best illustrated by our contention that a building so constructed by us costs approximately ten per cent less than a similar one carried out on what are regarded as 'normal conditions.'"

The factors which bring about this "very material difference," the article goes on, are not "something magical, but matters which are well known, much lauded, but seldom put into practice."

In the light of this extract, I trust that Abner will re-read that issue of the *Architect and Building News*.

I am, etc.,
L. J. HOLLOWAY,
President, L.M.B.A.

The London Society of Private Practitioners

To the Editor of A. & B. N.

SIR,—Following an encouraging response to a letter sent to a number of private practising architects in the London area, it was decided to hold a meeting to ascertain whether there was need for a London Society of Private Architects to deal with the problems which to-day face that section of the profession.

Accordingly a meeting was held on May 2, 1955, at the National Liberal Club, and after prolonged discussions, which included a discussion on the terms of the letter circulated by the R.I.B.A. to all its members, it was decided to formally put a motion to the meeting as to whether a London Society should be formed. This was done and the motion was carried unanimously. Accordingly the London Society of Private Practising Architects has now been formed and Mr. S. H. Statham elected as Chairman.

All Architects who are Principals in Private Practice who would like to join the Society are to contact Mr. David Steven at 21, Brunswick Square, W.C.1.

I am, etc.,
S. H. STATHAM.

MUSIC STUDIO AT HIGHGATE

architect

PATRICK GWYNNE

THE studio has been built in what were originally the kitchen quarters of the house which, together with a ten-foot extension, give a space 39 feet by 21 feet. Within these limits and those of the existing hipped roof, the studio has been designed to meet the needs of the owner, Mr. Clifford Curzon, as a working room for playing, study and for office work.

The slope of the garden and the desire for a change of level in the studio created the need for a platform at one end of the room, and in order that this should not appear too much like a stage a strong emphasis has been placed over the centre of the room, above the pianos, by means of the arched ceiling. This, with the flat ceilings at each end—only 7 feet high over the desk—gives a slight zoning to the room which is further emphasized by the thin supporting columns, the dividing cupboard fitment and the fireplace, the latter having a strong treatment so as to provide a secondary centre of interest in the room.

As this is a working room from which disturbances must be kept away, the main window has been placed on to a courtyard and only a long slit-like window gives a view on to the garden when this is sought. Strong light was not wanted but, rather, a good general light in the working areas of the room and for this reason the hidden skylight and the small domelights were introduced. The main window is fitted with a diamond-paned lattice—removable for cleaning and painting—as the view is of limited extent, but can be thrown open to produce a large clear opening when required or closed completely with a solid vertical sliding shutter. Unlike the modern living room this studio is an inward-looking room designed primarily for privacy and concentration.

The acoustic requirements were for a fairly quiet room but at the same time it was necessary to keep the sound of the

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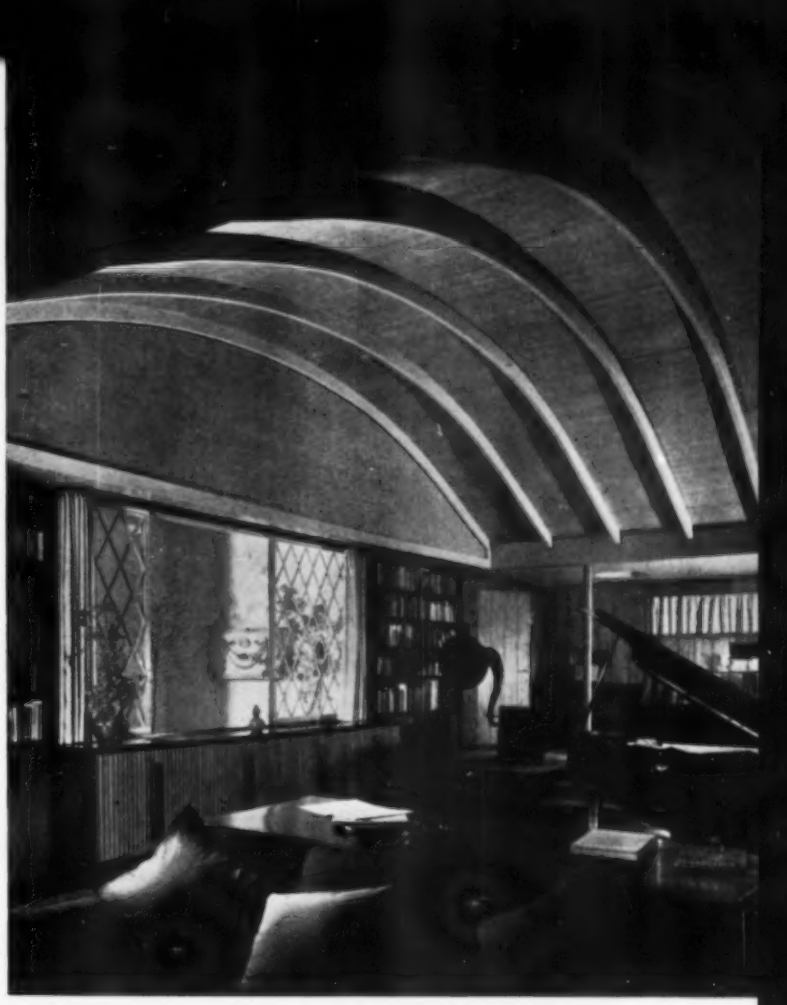
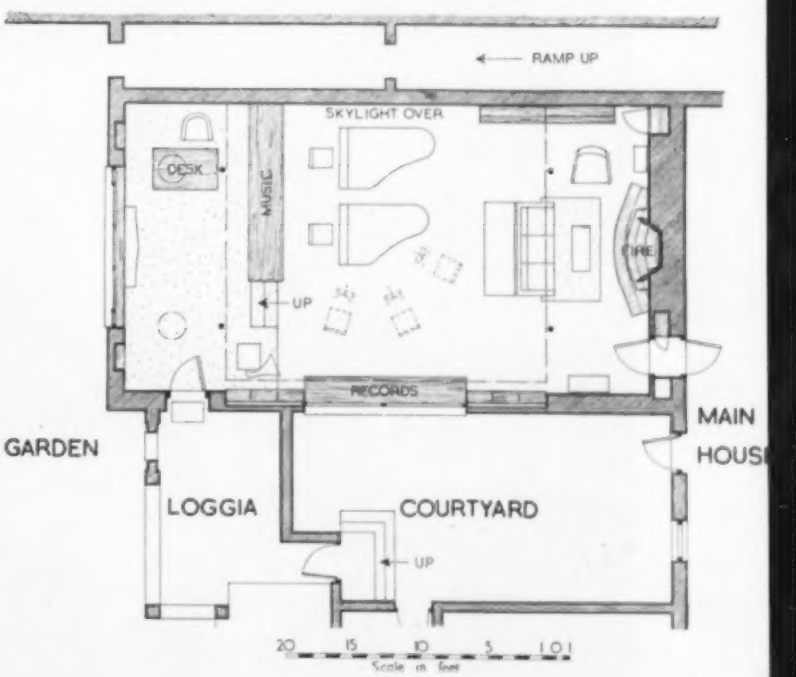
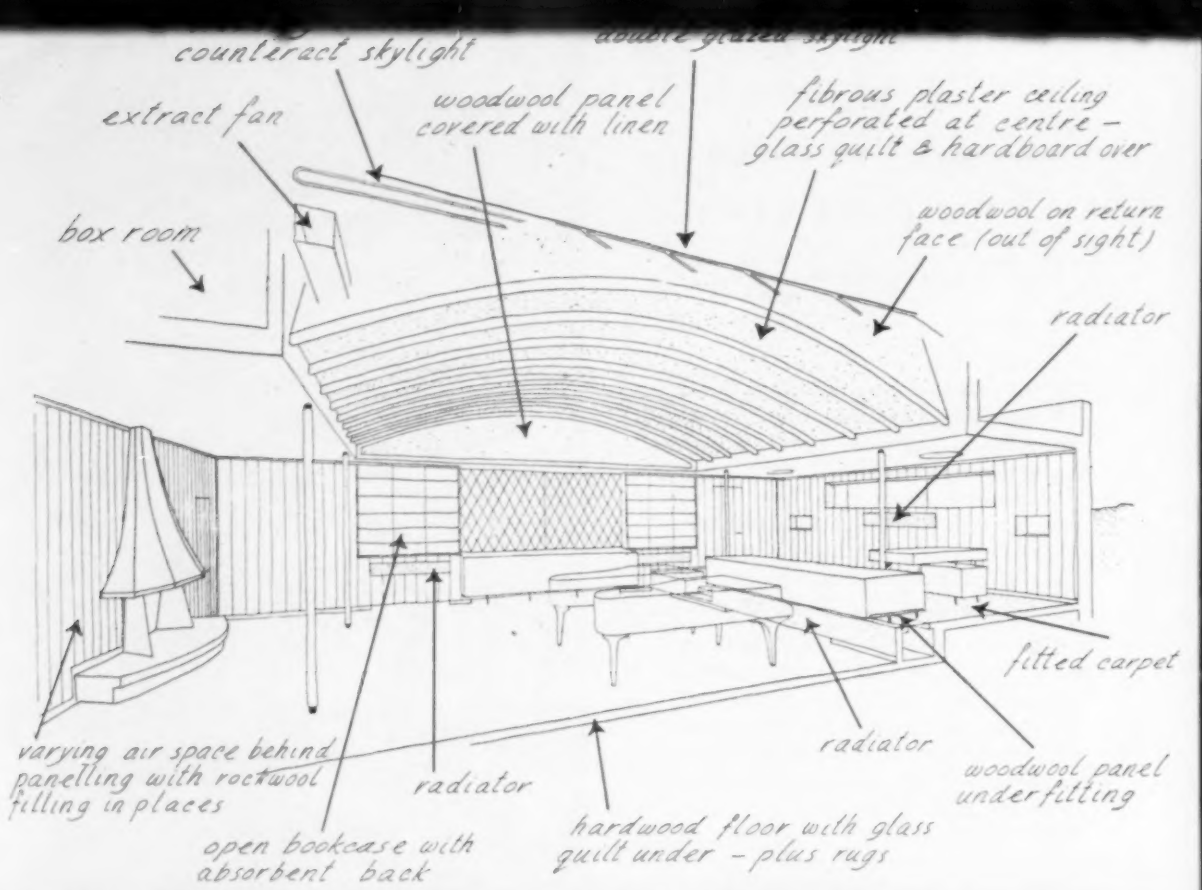
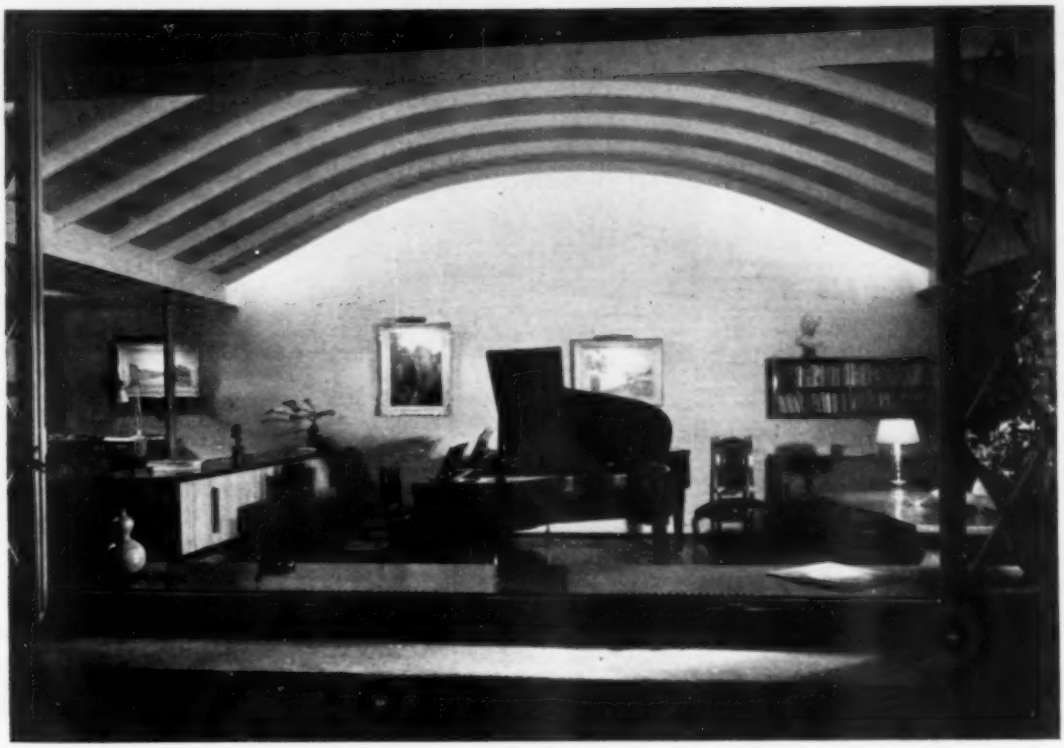
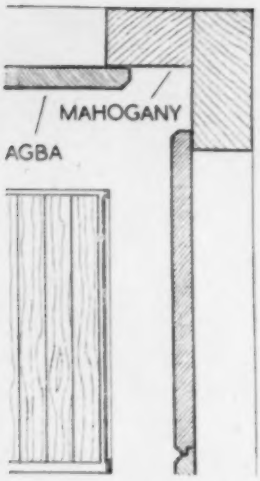





counteract skylight
double glazed skylight
extract fan
woodwool panel covered with linen
fibrous plaster ceiling perforated at centre – glass quilt & hardboard over
box room
woodwool on return face (out of sight)
radiator
fitted carpet
varying air space behind panelling with rockwool filling in places
radiator
radiator
woodwool panel underfitting
open bookcase with absorbent back
hardwood floor with glass quilt under – plus rugs



The Studio from three viewpoints

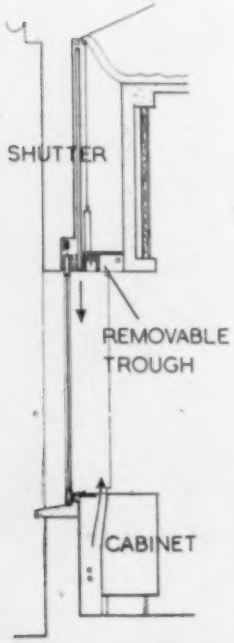


PANELLING DETAILS

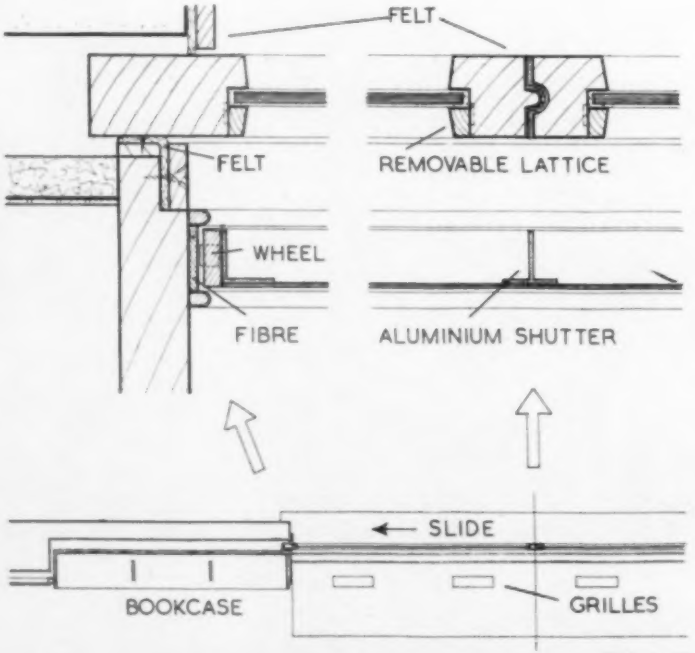
The Studio seen from the courtyard

piano from leaving the room, especially towards the side of the closely adjoining property on the north. To ensure this it was necessary to cover the whole ceiling with glass quilt and to pay particular attention to sealing all door and window openings, by means of rubber and felt gaskets and by providing areas of absorbency in the reveals. The treatment of the room generally has been to introduce a number of absorbent surfaces disposed about the ceiling, panelling, fitments and floor so as to give a good balance. The arched ceiling, which was chosen for other than acoustic reasons, required special treatment over the curved part to reduce focal reflections and this was done by perforating the fibrous plaster through to the glass quilt above, the latter being covered with hardboard to prevent the sound escaping through the roof and to return it a second time into the absorbent material. The architect was advised on the acoustic treatment of the room by William Allen.

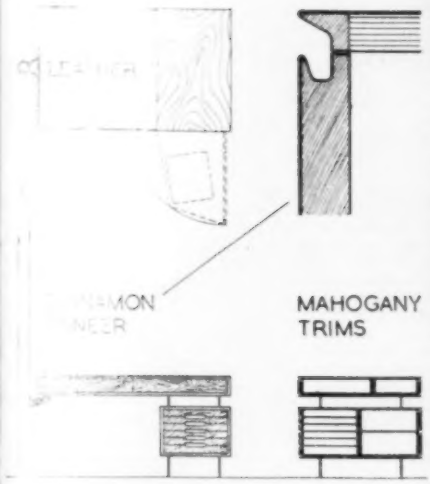
The decorative treatment of the studio is made up mainly of various woods and of Japanese grass-paper. No strong colours are used and all the surfaces which appear to be white are in fact very considerably broken towards grey or fawn. This quiet scheme was chosen to assist in the general atmosphere of undisturbed study and concentration but also in deference to Mr. Curzon's collection of Impressionist paintings.



SECTION



PLAN



DESK DETAILS

MUSIC STUDIO AT HIGHGATE

ARCHITECT: PATRICK GWYNNE

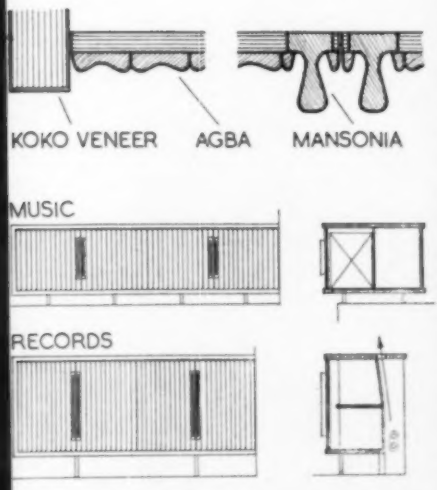
GENERAL CONTRACTORS: F. G. MINTER, LTD.

Heating and Ventilation: White, Bays & White, Ltd.
Electrical Installation: White, Bays & White, Ltd.
Fibrous Plaster ceiling: Jonathan James, Ltd.
Fireplace hood and fireback: Bratt Colbran, Ltd.
Fitments and desk: F. G. Minter, Ltd. Joinery Works.

The following are the materials used throughout:—

Floor: 8in. wide Mansonia planks.
Platform: Mauve-grey carpet.
Panelling: Agba planks, 8in wide, bleached, stained grey and waxed. Recessed trims in dark Mahogany.
Plastered wall: Pale honey-coloured Japanese grass paper.
Columns: 4in diam. steel, covered with fawn leather.
Ceiling: Warm grey Japanese grass paper on fibrous plaster arch. Paintwork in two shades of broken white.
Tympanum (over window): Linen, dyed yellow-grey, stretched in front of woodwool blocks. Mahogany strip trim.
Windows: Hardwood, painted light grey. Curtains for main window—golden-yellow Shantung silk.
Fireplace: Hearth in grey and black bricks. Fireback of reeded cast iron. Hood of polished steel with brass trims.
Fitments: Carcases veneered Koko, with fluted doors of Agba stained to a yellow shade; handles of Mansonia. Sliding doors under bookcase are lacquered a mauve-grey shade.
Desk: Cinnamon veneer with dark toned mahogany trims. Metal work painted mauve-grey.
Radiator grilles: Bronze mesh.
Bookshelf (under window): Dark green terrazzo shelves carried on satin chromed brass supports, with plate glass top.

(*The pictures shown in the photographs are a Utrillo and two Monets.*)



DETAILS OF CABINETS

The Kitchen

ALUMINIUM 1955 EXHIBITION

Extracts from a Paper on Building and Structural Engineering given on June 2 at the Royal Festival Hall by A. F. HARE, A.R.I.B.A., and J. M. SMITH, Chief Engineer, S.M.D. Engineers, Ltd.

Building

In nearly every sphere of building aluminium is now a well-known and accepted material with case histories extending back 50 to 60 years; roof and wall cladding, framing, components, fittings, decoration, services, etc. There are innumerable examples within these categories, but even so the special properties of aluminium are still not fully utilized.

Since the cupola of the Church of San Gioacchino was covered with aluminium sheet in 1897, fully supported roof sheeting has been developed in various forms, the best known contemporary examples being the many school roofs clad in aluminium. Corrugated roofing and wall cladding is used throughout the world, and at the present time British Standards for corrugated aluminium roofing sheets are in preparation.

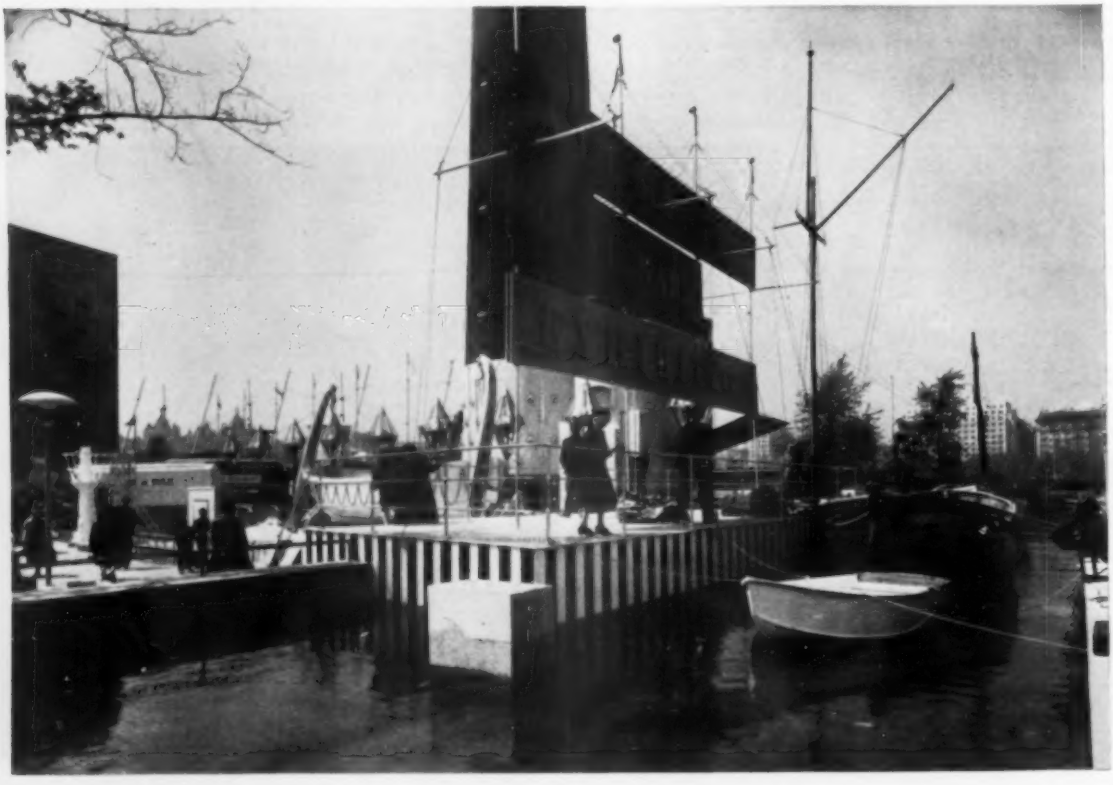
Aluminium roof decking, troughed sheets and interlocking tiles from sheet are further examples of recent applications where aluminium is statutorily accepted as a permanent roofing material by its inclusion in the Model Byelaws. Wall cladding offers even more scope for development. As a background there is the sheeting of many industrial buildings, the cast aluminium spandrels of the Empire State Building in 1930, the spandrels of Westbourne Court Flats in London erected about 20 years ago, and many other examples. This has developed into the vast field of curtain walling where aluminium is already well known. In America, with multi-storey structures where the weight of the cladding is a major consideration, the many advantages of aluminium have made this the most prominent of all materials and it is used in a variety of forms, including fabricated panels, sheet pressings, extruded framing, cast or extruded spandrels, etc. So far in the States, about thirty buildings are constructed with aluminium curtain walls and many more are under way. In this country several methods are based upon the well-known patent glazing principle using an extruded aluminium framework with aluminium, glass, or other filler panels.

Much has been achieved, but this is only the beginning of a vast development of "dry construction" which bids fair to revolutionize building. Collaboration between designers and industry is most necessary. Architects understand most of the problems, with emphasis on expansion and waterproofing, mechanical joints, etc., but to realize fully the advantages of a material it must be used with understanding of its nature and characteristics. Here is the opportunity for the aluminium industry to help in the development of this technique.

The principal requirements for curtain walling obviously include light weight combined with structural strength to resist wind pressure; and for ease of handling. Aluminium certainly possesses these properties. Site jointing requires a material suitable for producing various sections and shapes necessary to incorporate the requirements of all types of joints. These joints must allow for expansion, or even for the whole wall to breathe, and still provide complete water resistance. The forming of aluminium sheet, and particularly the use of aluminium extrusions, allow limitless scope for the designers in this field. The exhibits here give some idea of the vast range of extruded shapes that are possible.

Next in importance come durability, maintenance and appearance. The "concealed" members of the sub-framing are often located within a cavity where they cannot be inspected. The cavity may be ventilated or exposed to moist air from the building before reaching the vapour barrier. Aluminium is naturally resistant to corrosion, so if the surface is scratched or damaged in handling or fixing, there is no fear that it will deteriorate.

For the exposed surfaces, durability is allied to appearance. With untreated aluminium the surface may become slightly roughened due to oxidation, and will pick up dirt. It may be some time before this weathering is uniform and although the durability is not affected, large plain surfaces might become streaky and unsightly. In the majority of cases in America, aluminium anodized with a medium grey surface has been used. This is quite attractive and seems ideal for uniform weathering. Under normal conditions no maintenance is necessary. In many



The exhibition was designed by Ronald Dickens, M.B.E., F.S.I.A.

urban districts, however, the surface will become dirty and where a clean bright surface is required it should be washed periodically. Facings of this description can be protected during erection by a coating of strippable lacquer or lanolin.

For architectural effect, contrasts are required in form, texture and colour. The ease of fabrication of aluminium sheet is a technique which has barely been used by architects, but the American wall panel in the exhibition is one example in this field. Aluminium castings provide scope for intricate design and pattern, whilst spandrels fabricated from extrusions allow endless flexibility to profile—as in the spandrels to a Medical Centre in Minnesota where aluminium extrusions are used with marble flank walls. The play of light and dark of the metal profiles sets off the mass of smooth marble facing.

For large plain areas there are a number of ribbed and surface textured sheets; the effect is interesting but it may be advisable to use these in easily accessible positions in case dirt is picked up easily.

Colour anodizing has long been used internally and the production of "fast colours" by anodizing is said to be well advanced; this will certainly increase the range of surface finishes. Pyluminizing is a type of chemical treatment giving the pleasing green finish to be seen on the interlocking tiles in the Exhibition. Vitreous enamelling is also possible in a variety of colours.

The blending of aluminium with other building materials is obviously desirable. Here a valuable characteristic is the absence of staining from aluminium—particularly important where there is weeping from cills, copings, etc. Queries are often raised regarding contact between aluminium and other metals, cementitious materials, certain soils, etc. Where there is the risk of moisture there should be some protection but once this is understood it is a simple matter, easily prevented by proper insulation.

In America, aluminium is one of the most popular materials as a wall facing for the re-modelling of old buildings. Where there is freedom for planning and the structure is sound, it is often economical to renovate and re-mould both the interior and exterior of existing buildings. The whole of the defective or unsightly wall is re-faced. Cornices, etc., are demolished and the fenestration often replanned. The new cladding may be $\frac{1}{16}$in thick anodized aluminium sheet combined with various extrusions giving a completely new façade and providing additional protection and weather proofing.

Much that has been done is obviously based upon traditional building techniques. This has given us experience but much still remains to be done to utilize fully all the properties of aluminium.

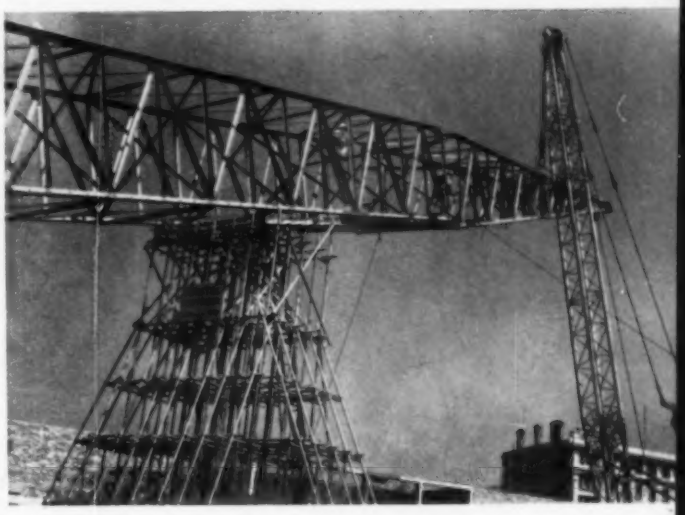
Structural Engineering

Whilst aluminium has many properties which render it a very suitable medium for structural work, there were a number of difficulties to overcome before much progress could be made in this field. For instance, in design, the comparatively low modulus of elasticity originally presented a problem if deflection were not to be excessive, and failure of compression members and beams due to torsional or local instability were to be avoided. The first was solved in the main by resorting to continuity which was applied to the main framework as well as secondary members. Trusses and stanchions and sway bracing were thus superseded by portal frames—sometimes with haunch ties where flat ceilings were specified.

The problem of instability was one of conflicting criteria because in attempting to increase overall stiffness without additional weight of section, thicknesses had to be reduced, resulting in a tendency to fail by local buckling or torsion. The first solution adopted for general use consisted of double-channel extrusions—either back to back or toe to toe—several inches apart and connected together by batten plates. This was economical in material but workmanship was rather expensive. Nevertheless, hundreds of structures were built in this manner and proved themselves satisfactory.

In the early days there was little official data available and no Code of Practice: consequently, it was difficult to persuade Local Authorities, engineers and other interested bodies to give aluminium structures their approval. It was thus extremely important that design and construction should be thoroughly sound, as an early failure might prevent official acceptance for many years.

Design and manufacturing methods must, of course, keep in step, and with the freeing of supplies of competitive materials it became necessary to concentrate on reducing costs. Consequently, having established the reliability of aluminium as a structural material and gained the confidence of responsible authorities, it was no longer necessary to retain higher factors of safety than those accepted for conventional materials, and so the appropriate adjustments were made in designs. Also, the double-battened channel was unnecessarily costly to fabricate; this had to give way to a simpler form of construction, namely, the introduction of bulb angles, channels and joists designed to



prevent premature local failure and to give reasonable torsional rigidity by virtue of increasing the area of metal at the roots. Results of tests on the new bulb angles in pairs as struts show that the calculated strength is justified. Further tests are due to take place in the near future to provide additional data.

As an alternative to the open sections designed to suit the particular properties of aluminium alloy HE10-WP, the alloy in most general use, hollow box-sections have been developed specially for buildings of portal frame construction up to 40ft span. These sections not only have superior torsional rigidity which render it unnecessary to stabilize the lower flange as a portal frame, but they also present a very clean appearance.

Perhaps the most widely known structure constructed of aluminium was the Dome of Discovery erected on the Festival of Britain site in 1951.

The alloy has also been successfully applied to the construction of large span hangars where the self weight is of major importance in design. One of these was erected in 1951 at London Airport for the Ministry of Civil Aviation and consisted of three spans, each of 150ft, and of portal framed construction, space at 22ft centres. Purlins and rails to span over two bays in order to reduce deflection would have meant handling unwieldy bars; consequently they were made 22ft long with raking stays to create continuity.

A hangar recently completed at the de Havilland Aircraft Co. works at Hatfield has a span of 217ft between centres of pins. In addition to its large span, the structure is interesting because of the treatment of the north light roof. This consists of N.L. trusses at 10ft centres spanning between portal frames at 33ft centres acting as boom stabilizers. No purlins are required as the aluminium trough decking spans between trusses.

A further example of large span portal frame construction is a hangar, of 218ft centres of hinge, nearing completion for the Ministry of Works. A special feature of this design is the single central wind girder, a device adopted in order to avoid the complications of expansion in the length of the structure.

Conventional multi-storey flats built by the Association

Prefabricated Blocks of Flats in Oslo

BY MYLES ASCOLI, A.R.I.B.A., A.A.Dipl.

with photographs by the Author

SINCE the war Norway, in common with the rest of Europe, has suffered from a serious shortage of housing and high cost of building. These facts were responsible for the founding of "Ungdommens Selvbyggerlag" in 1948. Literally translated this means: "Young people's self building Association." It is a co-operative movement which owns land, carries out building work, and has its own architects and technicians. The purpose being to cut down on the added expenses incurred by the extra profit each organization would require if all these services were in separate control.

The Association started in a small way by building a few pleasant, but unpretentious, timber houses. The members of the Association did a certain amount of the building work themselves. This proved a success and they then started to build more timber houses of various types. After this they became more ambitious and started to build conventional multi-storey concrete blocks of flats. The continued success of the Association can be judged by the constant growth in the number of members. At the end of 1948 there were 250 members. In 1950 building started in a small way and at the end of that year there were 88 units of accommodation under construction and 531 members. By the end of 1951 a further 151 were under construction and 120 had been completed, there were 1,850 members. In 1953 354 flats were completed and by the end of that year there were 2,630 members.

The Association had by now grown to such a size that they were able to consider a system of prefabrication, in order to cut down on building time.

Two large sites of prefabricated blocks of flats are now in the course of construction. In a central position, easily accessible from both sites, there is a large concrete mixer, and a shed in which the prefabricated units are manufactured. The whole system revolves around these two pivots.

The concrete is transported from the mixer to the site by lorry. Each lorry carries three hopper-containers in a special metal frame. When the lorry reaches the site the hoppers are lifted from the lorry by a crane and swung into position for pouring. The bottom of the hopper is then opened and the concrete falls into the position required.

The basement of each block is of conventional reinforced concrete, and contains an air-raid shelter.

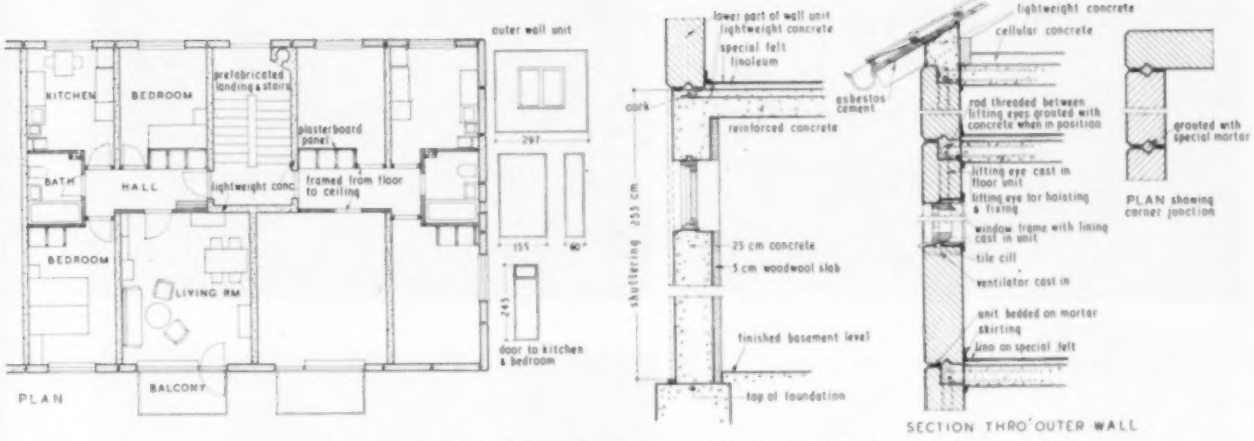
The internal cross-walls of the building are cast *in situ* of reinforced concrete and act as a support for the prefabricated wall units and floor units.

The prefabricated wall units are of a complete storey height and are made of Leca lightweight concrete with 1½cm of rendering externally and 1½cm of plaster internally.

[Continued on page 690

The first type of timber house built by the Association

One of the later type of timber houses



U.S.B.L. system of prefabrication

Conventional multi-storey flats built by the Association

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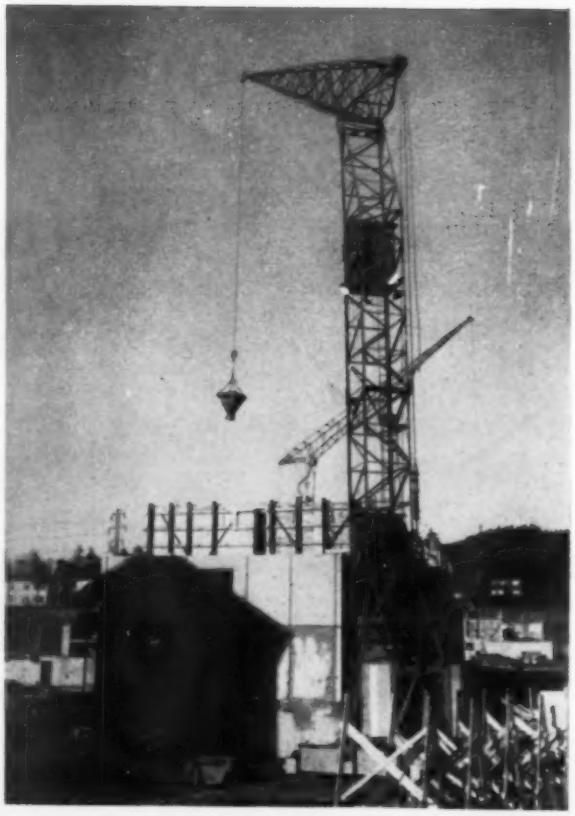
1. *The kindergarten built at the rear of one of the conventional blocks*

2. *Metal framework, containing three container-hoppers, which is fixed to a lorry to transport the concrete from the central mixer to the site*

3. *Prefabricated wall units stacked outside the shed in which they are made, ready for transport to the site*

4. *Cross-walls cast in situ with some of the pre-fabricated floor units and wall units in position*

5. *The in situ reinforced concrete basement with two storeys erected above. The in situ cross-walls of the third floor are being cast. Note the special concrete container being hoisted direct from the lorry into position for pouring*



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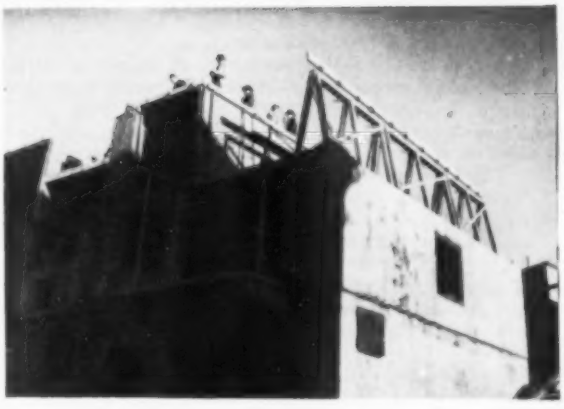
6. *Precast floor units ready for hoisting into position in the foreground*

7. *Prefabricated floor units in position. Note the lifting rings, and the conduits cast into the units to take the services*

8. *Prefabricated stair and half-landing in position*

9. *The adjustable trestle on to which the end floor units can be laid. When the prefabricated gable units are in position the floor units are lowered to rest on top of them*



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10. *The adjustable trestle in position to take the end floor units. The metal door in the gable of the basement is an emergency exit from the air-raid shelter*

Prefabricated flats in Oslo

Prefabricated Flats in Oslo

Timber window frames, linings and ventilators are all cast in. The floor units are cast long enough to span between the *in situ* cross-walls, and have conduits and holes cast in position to take the services. The stairs and landings are also prefabricated. All units are suitably reinforced and provided with lifting eyes.

When the *in situ* cross-walls have been cast the prefabricated floor units are laid to span between them. The wall unit is then hoisted into position and a reinforcing rod is threaded between the lifting eyes protruding from both the floor unit and the wall unit. This holds the wall unit in position, and the whole is then grouted up with concrete. (See section through Outer Wall on page 687.)

The end floor unit, which spans from the last cross-wall on to the gable wall formed of prefabricated units, is laid on to a special trestle. The horizontal member of this trestle can be raised or lowered like a jack. After the gable units have been hoisted into position the floor units are lowered until they rest on the top of the gable wall units. The two are then fixed together and grouted as described above.

The internal walls are also prefabricated, floor to ceiling height, of lightweight concrete. The door frames, with fixed lights above, also reach from floor to ceiling. Thus the internal walling can be erected by fixing together a very few standard light units.

The balconies are supported at their outer edges by tubular metal posts. In this method the loads are transferred directly to the lowest balcony which rests on a reinforced concrete bracket cast in with the basement.

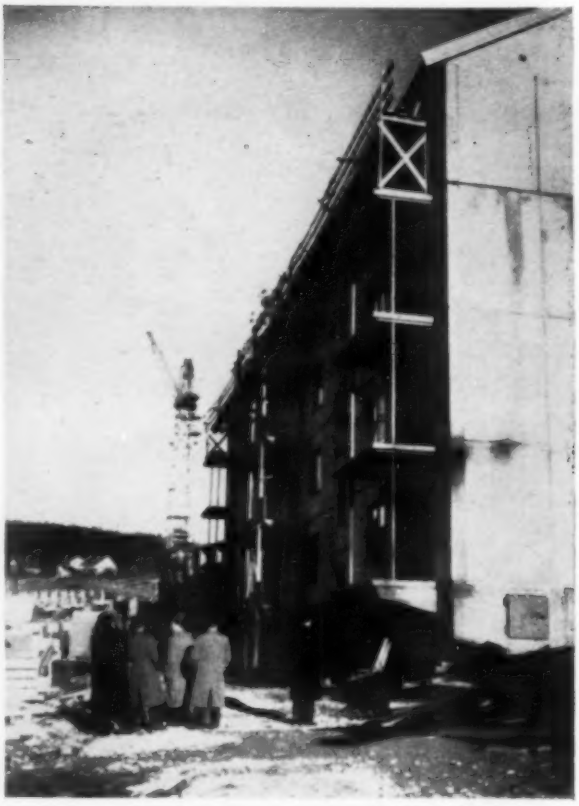
Conventional pitched roofs, with tiles, on light timber trusses have been used. In order to avoid the cost of scaffolding up the whole height of the building, to construct the roofs, brackets are clamped on to the top windows of the top floors. These brackets support a platform at eaves level from which the work to the roof can be performed.

Most of the internal wall areas have to be plastered in a conventional manner, but the inside of the external walls are plastered during prefabrication.

A lightweight concrete screed is laid on top of the prefabricated floor units on which is laid a special wool-based, asphalt-impregnated felt to take a lino floor finish.

Cellular concrete, or boards laid on matting, are placed over the top slab, in the roof space, for insulation.

The Association claims that in this method they have cut down building time by almost one half. They also say that they have not yet got sufficient information to say much about costs, but they are prepared to guarantee that the cost will not be more than using conventional methods of construction and it may well prove to be less when taken over the total number of blocks which they intend to construct in this method.



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11. *The weight of the balconies is transferred to the lowest balcony which rests on r.c. brackets cast in the basement. A platform supported on brackets clamped to the top window acts as scaffolding from which the roof can be constructed*

12. *The building nearing completion. Note the brackets protruding from the tops of the windows which support the platform from which the roof is constructed*

13. *The completed building*

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The Organization of the Building Industry and The Architect's Responsibility

By

SIR THOMAS BENNETT, K.B.E., F.R.I.B.A.

and

D. E. WOODBINE PARISH,

Past President, London Master Builders Association

OVER a very considerable period the value of the architect to the community has been judged by his ability to produce fine buildings, and as a profession we have perhaps been led to think of ourselves as artists in three-dimensional planning and designing for posterity. Posterity has little regard to the cost of the building at the time of erection, the period it needed for building, or the regulations which governed it at the time it was built. As long as the work of architects was primarily confined to the outstanding buildings of their time, this principle of judging the architect as an artist was probably true, but as buildings have been needed more and more for the everyday uses of the normal member of the population, so have economics intruded to a greater and greater extent upon the work of the architect. The public has also tended to judge the architect's work as much by his success in keeping to strict schedules of time and estimates of cost as by his power to give them a fine building when the task was finished. On the other hand, it is not unlikely that public taste as a whole has tended to rise, notwithstanding the criticism of modern work by older minds, and the architect is therefore faced with criticism from the point of view of the efficiency of his plan, the beauty of his elevations, the extent of his grasp of the scientific developments which have impinged on buildings, his power to spend large sums of money with regard to the value received in exchange, and above all, a power to handle men and a capacity for administration. This forms a formidable list of qualifications which few men can hope to acquire reasonably competently, and the answer can frequently be found only in partnership. On the other hand, public work looks for the answer in departmentalization. This multiple and diverse pattern of qualities and achievement undoubtedly represents the public view of the architect. It is in an attempt to study the extent to which the individual architect, the architectural partnership and the architectural department can fulfil the public ideal that this discussion is instituted, and the views of architects at this Conference may well cover an extremely wide field.

There are extensive indications that the public is appreciating the value of the architect in controlling its building proposals, since the percentage of work controlled is greater than at any previous period of building history. The profession as a whole is taking a wider view of its responsibilities, and the architectural press is reflecting this approach of the profession by attempting to disseminate the knowledge required in all fields of construction, equipment and detail. The leading architectural papers no longer confine themselves to the reproduction of drawings and photographs of fine buildings or fine photographs of the internal treatment of buildings. They almost invariably contain extensive articles which analyse particular sections of equipment, whether it is ironmongery, doors, balconies or heating schemes. The articles which cover such widespread items indicate the different types available, the sources from which they come, their relative efficiency, and at least give an indication of their relative cost. The profession, therefore, may consider that it is rapidly travelling along the path which the public would have it travel, and is doing its utmost to ensure that its qualified members reach the standard public opinion demands.

Building has undergone a fundamental change in the half century between 1900 and 1955.

In 1900, building was almost entirely a craft industry. The construction was of load-bearing brickwork or masonry, the floors were largely of timber or of very simple iron construction, and the finishings and equipment were of a similar straightforward character. The preparation of the drawings for buildings of this kind could be made entirely in the office of a competent architect, and the drawings so made were issued to a contractor, who in turn employed directly almost the whole of the men who were engaged in the erection, and in the great majority of cases he executed in his own yard the masonry, joinery and other finishing work which was ultimately part of the completed building.

The engineering aspect of building was in its infancy, and many buildings had only slight engineering equipment. This was true of structural steel, reinforced concrete, heating, electricity, lifts and other services.

The great majority of buildings were erected for wealthy "patrons" who were individuals, local authorities and government departments. The buildings concerned were largely town and country houses, town halls, museums, churches and similar structures. The distribution of wealth at the time was such that buildings of this character, when commissioned, had as their major objective the creation of a fine building more or less irrespective of the ultimate cost or time taken in erection.

In the space of fifty years the approach to building has changed, so that we are now faced with an attempt to design buildings which are of widespread value to the individual members of the population, and attempts are being made to house people in new houses on an unprecedented scale, to create so large a number of schools, shops, factories and other utility buildings that the nation is equipped as quickly as possible with structures which conform to the efficiency needed by the nation. This approach to building has meant that time and cost have become paramount factors in the solution of the problem.

A growing æsthetic taste has brought within the normal work of the architectural profession many buildings which in 1900 were erected as purely utilitarian structures. To a large extent this applies to factories and houses, and in a more limited extent it applies to certain other classes of buildings, such as schools, railway stations, electricity generating stations, and other buildings which 1900 was satisfied to produce to a common pattern once a design had been created. This resulted in the erection of buildings which, to a large extent, were built irrespective of local conditions, environment and other circumstances.

The Development of Engineering Service

As steel, reinforced concrete and electricity developed, individual men or firms studied the requirements of these services and developed companies which prepared designs and gave quotations for the work, so that design and construction were intimately married and associated with the limited number of people who possessed the necessary technical knowledge and equipment. Thus the sub-contracting specialist firm came into existence.

The Building Crafts

Many factors contributed to change the system of operating with individual craftsmen employed by the main building contractor, and to create sub-contracting specialist craft firms. The serious booms and slumps of the 20th century caused the builders

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to seek contracts far removed from their headquarters, where the transport of their own equipment and men was financially impossible. The increasing intensity of competition created specialists who, by retaining groups of men constantly employed and mobile, and developing intensive methods of production, succeeded in offering their services for individual craft work at a lower cost than the builder could carry it out with his own workmen. In the case of many good firms, so high a standard was normally worked to in their own shops that when they tendered for lower standards of work their workmen were not prepared to reduce their standards, and the work was of a higher quality than the price justified. For all these reasons specialist firms appeared in joinery, plumbing, plastering, painting and other trades.

In 1955, therefore, the architect has to design a building, possess knowledge covering a wide field of technology, and be familiar with methods of contracting on a scale quite unknown to his counterpart in 1900. The builder similarly has largely lost contact with the workmen, he employs them for short periods, they owe him less loyalty, and he tends to sub-contract on a scale which was formerly unthought of.

Bungalow in stone
Architect: R. H. Pickles

Office building and (below) canteen for W. N. Sharpe Ltd.
Architects: Chippindale & Edmondson

Building Owners

Building owners have probably become more numerous and much more in need of widespread advice on the problems connected with their buildings. In these conditions the architect, fully to justify his position, must not only be able to design the building, but must be able to offer knowledgeable and expert advice on a large number of aspects of the building problems with which he is presented. If the profession is to secure the confidence of this widespread building public, it must show that it is capable of providing advice on a sound and reliable basis, which enables the building owner to proceed with confidence. Advice of this kind falls under a number of headings:

(1) *Financial advice.* In all periods of building, the control of costs has been difficult, but in a period where money is rapidly diminishing in value and building takes place in widely different parts of the country, both estimating and cost control have become increasingly difficult. Nevertheless, it is one of the big essentials of the building public to-day to know that they can set out to spend a given sum of money, and finish with a building which has cost precisely this sum. This involves accurate estimating and constant records of the cost of various types of construction and decoration. It involves on the part of the architect a power to assess the relative value of different types of construction, to know at what point he must curtail his specification, and in the early stages present costs, together with sketch plans and outline specifications, which indicate with a considerable degree of certainty the amount of money the client will have to pay for a given building. Once the estimate is given, it must be capable of being confirmed by tender or negotiated price, and it must be able to be carried to its conclusion with a similar financial position. There must be constant advice to the client as to the financial position of his completed works, and finally the work must be handed to him, if possible, at the figure at which he started.

(2) *Legal advice.* In 1900 such laws as related to buildings were of a precise and specific character. Once the law could be interpreted, it was possible to know precisely what could be done and what could not. The measure of rigidity which this created caused the members of the industry and their legislators to indulge in a large spate of permissive legislation, where controls were not precisely stated but were in the form of power given to committees to sanction works over a wide field. This change in the aspect of legislation has meant a vastly increased amount of work for the architect who controls the early stages of the scheme, an extensive knowledge of what may or may not be permitted, and the power to thread his way through this type of uncertain and difficult control. He must be able to advise his client what he can build in the first instance, and ultimately secure approval for a building which is the same as that which he put before him at the commencement of the discussion.

(3) *Technical advice.* With the growth of high tensile steel, welded structures, aluminium, patent floors of various kinds, concrete three-pin arches and complicated foundations, the field of technical knowledge has widely extended, and it is impossible to-day to lay down a sketch plan without an intimate knowledge of the method by which the building is to be constructed. It is also necessary for the architect to be able to give advice to his client which results in the use of the most economical and rapid construction for his particular building. This carries with it the power not only to assess the best method of construction, but to be able to give advice on the relative costs of the different methods which are possible.

Engineering Equipment

The developments in heating, ventilation, lighting and acoustics have all brought with them the necessity that the architect, in producing his sketch plans, must have a clear knowledge of the type of equipment that he is going to recommend, and at an early stage of the proposals discuss the relative advantages of different methods and their relative costs. At a very early stage in the discussion of buildings of substance, this equipment must be determined or the plan will fail to produce a structure into which it can be introduced with economy and efficiency.

Finishing Materials

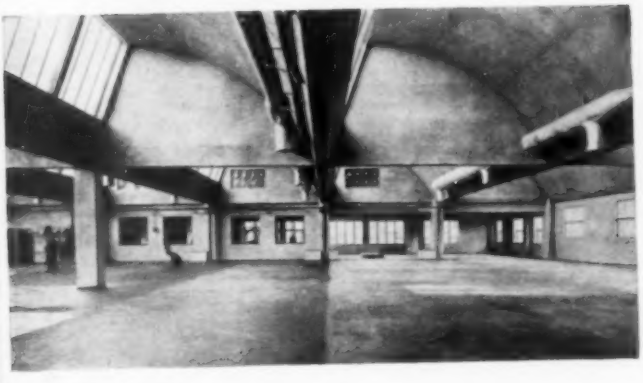
With the growth in the cost of building has come the growth in the availability of alternative methods and synthetic substitutes. Over the last 20 years there have been widespread attempts to find suitable and more economical alternatives for such fundamental things as the walls of houses, surface treatment of floors, alternative types of windows and mass-manufactured doors. This involves a knowledge again of relative costs, wearing capacity and suitability.

Halifax Technical College
Architect: R. H. Pickles

Bacon factory near Leeds
Architects: Chippindale & Edmondson

Pharmaceutical block, Sandoz Products Ltd.
Architects: Chippindale & Edmondson

Factory in Dublin
Architect: R. H. Pickles



Contracting

The manufacturing industries produce an article and put it on the market in competition with other similar articles, and the public judges the relative efficiency and value of these articles in their finally completed form. Motor-cars, radio, aeroplanes, manufactured clothing are all in this category. The only portion of the building industry which can produce a similar article is the housing section, where the speculative builder puts a house on the market on similarly competitive conditions. The rest of the industry must find a means of satisfying the public that it is paying the lowest possible price for its building, and must satisfy the industry that a young and enterprising firm has a reasonable possibility of obtaining contracts in competition with its older and established competitors. So far the industry has devised no better means than that of the competitive tender. It is clear that as the quality and standard of building work for different buildings varies, open competitive tendering is unfair and unsound. It fails to compare like with like either in the tender period or in the finished building. Limited tendering is, therefore, essential to the well-being of the industry. Where firms have created a good reputation by the standard of their work and conduct, negotiated tenders will often produce a satisfactory answer which in many cases may be sounder and better than that of the competitive tender. But if negotiation were carried to its ultimate conclusion and tendering were eliminated there would be no basis for negotiation. The architect must know when to recommend the negotiated tender, and the assessment of the builder, and when to recommend tendering and name the firms invited to tender. Much has been said about the advisability of bringing in the builder for discussion at an early stage. In general, the essentially practical character of the builder's work and organization does not produce fruitful discussion when drawings are in a fluid state. Much more constructive results are obtained when the design is reasonably firm and working drawings are approaching completion, assuming the architect's practical knowledge to be sound.

Sub-contracting

It is useless to consider that the industry can come back to the type of organization which existed in 1900. The economic conditions of working to-day preclude any such possibility. The industry is, therefore, faced with the execution of work on the basis of a main organizing and controlling contractor working with a team of specialist sub-contractors. The builder will work best if he works with sub-contractors he knows, if they are all efficient, and if they are clearly and unmistakably under his control. Fundamental sub-contractors should be appointed before the bills of quantity are complete and their names should be mentioned in the bills of quantity and the specification. So far the experience of specifying the work and leaving the builder to find the sub-contractors has too often produced firms of a low grade which are paid insufficient money to produce work which satisfies the architect and the client. In the great majority of well-thought-out buildings it is impossible to complete the drawings until the principal sub-contractors have been appointed, so that selection by the architect with or without competitive tender is essential to the completion of efficient working drawings. If reliable builders are used, it should be possible to reduce the number of sub-contracts and to make sure that at least the craft trades are included in the main contractor's work.

A great many contractors consider that the nominated sub-contractor, having been brought into the contract by the architect, will expect to act independently. They therefore fail to co-ordinate his work and they leave him as a loose member of the contract team. Many contractors fail to find out precisely where the sub-contracts start and finish, or to make sure that they have welded the sub-contractors into the time schedules, neither do they keep closely in touch with sub-contractors' material deliveries and other matters which are essential to the progress of the contract as a whole. From the architect's angle it frequently seems that the precise services which the main contractor must give to the sub-contractor are loosely defined and are unsatisfactory, frequently leading to friction. The sub-contractors have not always undertaken the full responsibilities imposed on the main contractor when the sub-contracting tenders are called for, or when the main contractor attempts to make them part of his team by calling upon them to sign an internal sub-contract. The sub-contractors frequently attach closely printed conditions to their tenders which no one reads and which they produce when any difficulty arises. There is no doubt that this looseness, lack of co-ordination and supervision are some of the main causes why some contracts do not run smoothly and do not keep to their time schedules.

Contractors' Sub-contractors

There is frequently outspoken criticism on the part of contractors that far too much of the contract is let to nominated

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sub-contractors, yet it is common experience, when these nominations are omitted and the work is specified, to find the main contractor obtaining tenders from a widespread and often inferior list of sub-contractors, and to find the sub-contract placed on the basis of severe competitive tendering with sometimes a Dutch auction at the end. The architect is thus presented with sub-contractors who fail to carry out the standard of work specified, but when criticized are found to be working for sums so substantially below that of the main contractor's price that hope of securing a proper standard of workmanship is almost at an end.

The Design of Specialist Work

The history of the specialist contractor shows that early knowledge was almost entirely confined to the contracting firms. In the case of the soundest organizations this has continued to develop, so that in many cases the best combinations of technical design, practical construction and economy are found in these contracting firms. In a period of relative shortage of material, placing the design of structure with these firms has often ensured the supply of necessary materials, where working with a consultant and a subsequent contractor has created delay in building, or actual disorganization. The complication of a modern large building is such that it can no longer be designed in its entirety within the 6 per cent fee which the public have accepted as the remuneration of the efficient architect, and in such cases it is necessary to educate the public to the fact that portions of the buildings must carry additional fees to enable them to be designed at all, e.g., the drawing of load-bearing walls on the architect's drawing takes neither more nor less time than an accurate drawing of the beams, stanchions and floors which result from the calculations of the engineer. The engineering calculations are, therefore, an additional burden on the production of the drawings. This design can be supplied by the consulting engineer or the design engineer on the staff of a contracting firm. It should be easy to devise a means by which either source of design is accepted. If the design of the contractor is accepted, the architect should ascertain the cost of the design service and treat it as a consultant's fee. The cost of steel or concrete design should be recognized and paid for by the client either in the form of a consulting engineer's fee or the design fee in the contract. This choice of the designer applies equally to schemes of heating and ventilation, and in these cases also the industry is faced with the fact that a great deal of the design ability of the country is in the hands of the personnel of leading firms of heating and ventilating engineers. The employment of specialist firms by architects clearly lends itself to abuse, as do all other forms of contracting. It is possible for an architect to have a firm of heating, ventilating or constructional engineers with which he places his contracts, which give him a high standard of service technically, but equally charge the client a disproportionate contract sum for the contracts which are placed with the firm. The profession should, therefore, devise a means by which such abuse of advice is impossible.

Execution of the Contract

It has become the custom in this country for contracts to be based on the production of working drawings, a bill of quantity, a tender or negotiated price from a builder, supervision of the building by a clerk of works, with the over-riding control of the architect. This machine is perfectly capable of producing a well organized contract. In practice it has been subjected to considerable criticism. Criticism arises on one hand because of a number of inefficiencies on the part of the client, architects, quantity surveyors, builders and clerks of works concerned, and on the other to the conditions of working, which in some measure are inescapable. It is desirable to start with the basis of an efficient organization. This embraces receipt from the client of firm, unaltered instructions. What might be called professional clients should be, and frequently are, quite capable of giving these definite instructions. There are councils which are constantly building a similar sort of building, e.g., schools; development companies which are experienced in large-scale building, and certain types of factory organizations which build continuously, which may be called efficient clients. In all these cases it is still necessary for the architect to drive home to committees, boards of directors and others the serious disorganization and cost which they incur when they change their minds and issue confusing or conflicting instructions. With the widening of scope and amount of building, and the increasing entry into the industry of those who build single buildings, the fundamental necessity of firm, unalterable decisions has not been realized, and architects have not been strong enough or sufficiently convinced of the necessity to insist upon their clients making up their minds, approving or signing sketch plans at a given period, and leaving those drawings unaltered for the rest of the contract. This is partly a defect of the building organizations of the country and partly the failure of the architects as a profession to instil this necessity in the minds of the public.

Technical Knowledge

It is probably a deficiency of the approach of the architectural profession to the design of buildings and a weakness in professional education that far too many architects think the widespread knowledge of technical principles which they must possess is either outside their scope as artistic designers or beneath their dignity as producers of fine buildings. This is an anomaly in an age where the building of structures with false classic detail has not only ceased to be accepted as design but has become anathema to the architectural approach to buildings, and it is possible that we are seeing widespread lack of the necessary knowledge only as a passing phase.

The Quantity Surveyors

Quantity surveyors have entered the building industry in recent years with increasing force. They have built up a system of "taking off" which is not always suitable for the work in hand, and in the case of housing is still far too elaborate and too costly. The building industry and the quantity surveyor should agree on a much simpler type of quantity surveying and a uniform system of costing which will enable builders confidently to price the same item in the same form. It is a serious burden on the industry that alterations frequently cost more in quantity surveying fees than the saving in cost to the client. The remedy quoted by some of those familiar with America is that there should be no quantity surveyors. There can be no doubt that in this instance American practice is behind British practice and in principle one set of quantities is more efficient and more satisfactory than the multiple sets of figures produced by American contractors who are tendering for the work. There has been a tendency for the architects to allow the quantity surveyors to take over too large a proportion of their work, and cases exist where the quantity surveyors write the specification, deal with the party wall awards and do other extraneous services for which the architects are paid. The profession should not allow these encroachments to take place and should insist upon carrying out the work which proper control of buildings demands.

Completed Drawings

The builder cannot possibly organize his building unless he has complete drawings and a specification. The difficulty of producing such drawings under adverse conditions has become more and more acute. The first fundamental difficulty is that of local authority approvals. Delays in securing these approvals, and securing them in a definite form, frequently run into months and sometimes into a year, and frequently for this or other reasons the building owner forces the architect and builder to commence the work within a week or two of the time at which local authority requirements are defined. The present method of giving approvals in London requires drastic overhaul, so that they are much clearer and given in a much shorter period. Without this clarification the architect is unable to give the builder clear and accurate instructions at the proper time. In default of complete drawings such information as is available should be issued in a concise form and in the right order. With a complete grasp of the essentials of building this is possible; it should be accompanied by weekly meetings of the architect, the contractor and the relevant sub-contractors, and the issue of instructions which are as extensive and definite as the circumstances permit.

Building Organization

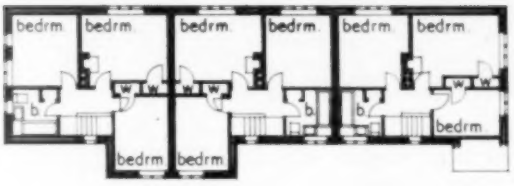
There can be little doubt that the building industry as a whole has failed to adjust itself to the far more complicated organization and administration which the sub-contract system of building has imposed upon it. Frequently its supervisors are insufficiently educated, have insufficient technical knowledge and do not take charge of the work of the sub-contractors as an essential part of their contractual obligations. Very much the same thing applies to the clerk of works. Somehow the building industry must produce many more men of a high standard of technical knowledge, of broader outlook and a greater capacity for organization. In this field there are a number of outstanding exceptions.

Claims

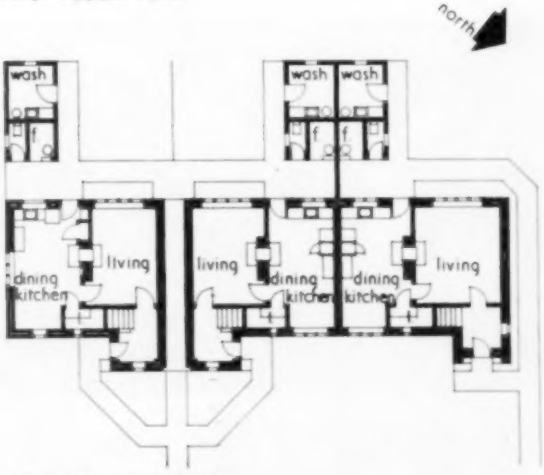
One of the biggest causes of complaint of the building public is the system of claims on contracts after the work is completed. It has been the custom of builders not to disclose these claims until final accounts are rendered. This system ought to come to an end. It should be possible each month when financial

Police Housing for West Riding
Architect: Hubert Bennett, County Architect

Housing for Wetherby R.D.C.
Architects: Jones & Stocks



FIRST FLOOR PLAN



GROUND FLOOR PLAN

statements are issued for the builder to be compelled to give notice to the architect of any work which he considers has involved additional cost, with some estimate of the amount, and this should be returned regularly to the clients so that they know how their costs are running. If the builder has not declared his additional cost in this way he should be precluded by the contract from claiming it at a later date.

The Building Industry

Up to this point in the paper, consideration has been given to a large number of factors in the work of the architect, the consultants, the quantity surveyors and the builders as they appear from the point of view of the architect's office, but it is not outside the scope or experience of the architect to have views upon the organization and execution of the work in the industry itself, although this aspect of the industry is more immediately within the control of the builders and contractors. If this portion of the discussion serves no purpose other than to cause the builders to criticize or endeavour to answer the criticisms raised, it will at least have served the purpose of publicizing the views of an informed outsider.

Sub-divisions of the Industry

The building industry employed pre-war approximately 1,000,000 to 1,200,000 people. It is considered to-day that the building and civil engineering industries combined are employing approximately 1½ million people. The industry is, therefore, the largest single industry in the country. Within this large field of employment there is clearly room for very widespread differences in skill, ability and experience, but the industry has three or possibly four main sub-divisions:

(1) Civil engineering works, i.e., roads, bridges, railways, docks and harbours.
(2) Major contracting.
(3) House building on an investment basis.
(4) Small works, jobbing and maintenance.

Although sections of the industry are interchangeable, there is a much larger measure of permanent sub-division than the public normally imagines, and in particular the maintenance section of the industry, which employs possibly one-third of the total number of building employees, is spread throughout the country. It is the section of the industry which enters people's homes and comes most closely into contact with individuals. It is, therefore, constantly subject to criticism. It would not be unfair to say that in this field there is a great lack of administration of the standard required. Maintenance and jobbing present great difficulties in the control of men when they are scattered over a wide field in groups of two and three. Nevertheless, this section of the industry spends a large amount of the public's money year by year, and it is quite essential that the small builders, foremen of works and the men who work for them should raise the standard of their efficiency and organization considerably above the present level. Probably two main features cause the greatest amount of loss, disorganization and criticism. The first is the ordering of materials. These materials occur in small quantities, often their precise size cannot be ascertained until existing work is opened up, but, whatever the reason, it is common to find workmen arriving at houses or buildings with no material available, sometimes making a number of visits before the material arrives. The building owner experiences immense discomfort because his building is taken to pieces, and then waits appreciable periods before it can be reinstated. There is room for a very substantial increase in the standard of administration which is concerned with materials ordering.

The second is that the industry has ruled that men must receive periods in the morning and afternoon called "tea breaks," and they have also ruled that they should arrive and depart at specified times. There is no doubt that the small builder employing 15 or 20 men in groups of one or two has an extremely difficult task in time-keeping and in the limitation of the morning and afternoon tea breaks to the expected 10 or 15 minutes. Nevertheless, it is widespread experience of building owners that time-keeping and tea breaks represent a very low standard of morality on the part of many men, and a great deal of slackness on the part of the employers.

House Building

The house building section of the building industry is the one section which creates a building and offers it to the public when it is finished. The competition amongst individual house builders or developers is keen, the standard of article offered is generally high, and the value is often extremely good. As a whole this section of the industry appears to be very highly organized, very highly efficient, and probably produces a better house at a lower cost than its counterpart in any other country in the world. Attempts to compare the cost of house and flat building in this and other countries disclose that none can compare with those of English houses. The house builder is

Sir Thomas Bennett

frequently criticized for lack of design capacity, and the houses are sometimes regarded as badly placed on site, while most architects criticize the repetition of the semi-detached dwelling which architecturally produces poor composition and bad street pictures. It does not alter the fact that the average householder requires a semi-detached house and prefers it to a terraced house, and would like a detached house if he could afford it. It is a poor answer to say that whether the householder likes it or not he ought to be forced to live in a terraced house because architecturally it is more effective.

Building Contracting

Building contracting is the section of the industry most closely in touch with the architect, and it is the section of the industry where the architect's work is most commonly carried into execution. It is a remarkable feature of the industry that different building firms can establish a standard of work which is characteristic of the firm, and that an almost identical specification can be interpreted into quite different standards of building. It is also remarkable that the same firm can tender on a not dissimilar specification and produce one standard of building for a bank or insurance company and another standard of building for a shopkeeper. It is incumbent on the architect in inspecting and supervising the building to accept or reject building work of a standard which is appropriate to the type of client by whom he is employed, but these differences of standard exist and are recognized. It is clear, therefore, that in compiling lists of tenders the architect must exercise very sound judgment if he is to include in his tender lists builders of similar standards of quality.

Quality and Cheapness

Accepting the fact that differences of quality of building can cover a wide range of finishes and, therefore, of costs, one of the essentials of the architect in designing the building, writing the specification and choosing the builders is to know the standard of building which suits a particular client, to know how to raise the standard and how to cheapen the building when one or other is required. This resolves itself largely into a matter of experience and judgment.

Wages

Close contact with the industry shows that there is very severe negotiation when wage increases are demanded by the trade unions, but that many contractors, sometimes the largest, pay rates substantially above the agreed rates the moment settlement is reached. The industry, therefore, as a whole is faced with recruitment on the basis of low wage scales and payment of disproportionately high wages to a small section of its members. The payment of bonus on output gives rise to substantial costs in the form of measurements on the part of the contractor, and various types of compromise, satisfactory and unsatisfactory, are made to avoid the cost of measurement. This often results in labour disputes or a poor standard of work. America appears to have adopted an alternative policy of paying a high standard rate of wage and thus atracting a highly intelligent, competent and energetic man. In general this man sets out to earn the wages which he is paid. It is true that America still runs its country with a measure of unemployment, the men are faced with high earnings or something near starvation. Many of the problems of the industry would be solved if the men recruited were more intelligent, better educated, had better craft knowledge, and were paid the rate their union had agreed with the recognition for output secured or for exceptional skill.

Materials Ordering

Materials ordering reaches an extremely high standard of efficiency in a great many organizations, but in many others shortages disclose the most scrappy and casual method of obtaining scarce materials, lack of ordering with sufficient time for delivery, and other serious omissions which result in disorganization of the work. Accurate material ordering is closely wrapped up with the provision of complete information from the architect, which is frequently lacking. It may be that if schedules of material ready for ordering were incorporated in bills of quantities, early ordering would be facilitated. I think this point should be considered by The National Federation of Building Trades Employers and the Royal Institution of Chartered Surveyors.

Protection and Lighting

When I was Director of Works at the Ministry of Works I investigated the possibility of providing better cover for men at the early stages of the contract, the possibility of more extensive lighting both of the external works and of the interior of buildings, and the provision of protective clothing. My investigations at that time convinced me that all of these provisions produced material results. It may be that an accurate and careful analysis of cost and resulting output would not show results which I appeared to secure in the war period, but I consider that in many ways conditions of work in building could be made to resemble more closely the conditions in industrial factories. This would be a larger factor in helping the building industry to recruit a better type of man.

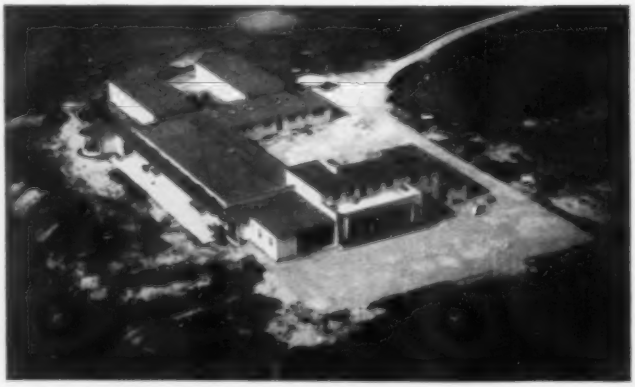
Scaffolding and Plant

There at last appears to be a serious study of scaffolding and plant, but these portions of the equipment of buildings seem to lag behind the needs. Scaffolding ought to be able to rise in lifts of not more than a foot, so that a man is always working level with his work. The hoisting and placing of materials is showing great improvement, but still needs further study.

Site Staff

Probably the greatest single difficulty in the industry is the shortage of highly trained site supervisory staff both in numbers and in standard. Amongst a small number of the leading con-

Proposed new building,
Pool Village Memorial Hall
Architects: Chippindale & Edmondson



Leeds Children's Holiday Camp,
Silverdale, Lancashire
Architects: G. Alan Burnett

tractors, and in certain cases with smaller contractors and individual firms, the standard of men and the number of men employed on site supervision is beyond criticism, but in many cases both the amount of supervision and the standard of education of the supervisors fall far below essentials and far below the standard of parallel men employed in stable factory production.

Research

All industries to-day regard research as vital, and most of them subsidize it substantially. The building industry is casual about its research and has not subsidized it at all. As long as this state of affairs remains it must be a fundamental weakness. It is still difficult for the industry to know in detail the problems upon which work is in progress and properly to absorb the results established.

Education

There can be no doubt that the basis of efficiency for the architect and the builder alike is education. Sub-divided into its respective categories, it is possible to give a few leading principles which must be worked out as educational systems.

The Architect

The architect requires now, as he always did, to be an outstanding planner and designer, to have a sense of proportion, a knowledge of detail, and a high standard of taste. The medium through which these thoughts and ideas will be conveyed to other people is that of the drawing board, so that a substantial standard of draughtsmanship is still essential. No amount of technical knowledge or application must be allowed to submerge these outstanding qualities of the profession. Added to the architect's power of design must be a working knowledge of the principles of scientific construction which has now become part of building and a substantial acquaintance with all the equipment which goes into modern structures. There must be a measure of first-hand knowledge of building practice, and this can be best acquired by a period spent in a clerk of works' office or in some capacity on the building itself. Outside this technical equipment, power to grasp the cost, the implication of finance, the effect of building law, and above all, high qualities of administration are essential.

The Builder

From being a simple craft industry, building has become a complicated matter of organization. This organization can only be effective if it has as a background a high standard of technical knowledge so that the day-to-day administration is carried out with efficiency and intelligence. Actual training in organization and administration can undoubtedly be of great value, and while more extensive school and university education is unquestionably necessary, nothing can take the place of practical experience which only contact with the work can produce.

The Education of the Craftsmen

It is true that the industry still looks to apprenticeship as the principal method of recruiting its craftsmen, but it is a serious blot on industry that some of its largest contractors expect other members of the industry to train their craftsmen for them. This ought to be impossible. A large amount of the craft work of building in the future will be carried out by men who need never possess more than a very moderate craft equipment. Much brickwork is laid between beams and stanchions with no corners, no reveals; much of the work of carpenters is in nailing down, centring or fixing prefabricated doors. It may be that the industry must train men who do not pretend to be fully fledged craftsmen, and it may well be that these men are better trained in training establishments than by an attempt to train them by apprenticeship. The industry is supposed to need about 7,000 or 8,000 more men per annum than it trains. It will never be efficient so long as this remains true.

The Craftsmen

It is useless to continue to complain of poor craftsmen unless the industry ensures that each year it has trained at least sufficient men to make up the wastage which normally occurs. It is questionable whether training to-day is best carried out entirely through apprenticeship. Either the industry or the State or both must produce training schools for craftsmen which are sufficient to cope with the supply of craftsmen which the industry must have.

Summary

To reach the standard of efficiency which the public demands from the profession, essential qualifications may be summarized.

(1) In every architect's office it is necessary to have
- (i) a high standard of planning and design;
- (ii) a knowledge of decoration and colour;
- (iii) an extensive knowledge of construction, especially of the basic principles which involve choice of method, optimum spans and relative costs;
- (iv) a knowledge of the principles which govern the engineering equipment of buildings in connection with heating, lighting, ventilation, acoustics and other essentials;
- (v) a wide knowledge of materials, including synthetic substitutes and suitability of application;
- (vi) a knowledge of the legislation which governs planning and building;
- (vii) a command of the means of dealing with sub-contracts and the administration of the main contract;
- (viii) an appreciation of cost;
- (ix) ability to supervise and control work in progress.

(2) The profession must ensure that it constructs and retains
- (i) a comprehensive system of day and evening education with a wide choice of method. All educational courses to have a proper balance between artistic and practical subjects;
- (ii) the provision of adequate teachers and professors all having practical experience;
- (iii) a live organization which constantly reviews the progress of construction and design and the best methods of administering contracts;
- (iv) establishes conferences which ensure the principle of co-ordination between the architect, consulting engineer, quantity surveyor, contractor and sub-contractor;
- (v) regular exhibitions which present world architecture and construction to the profession.

The Client. The training and education of the public to appreciate the work which is done by the architect and ensure that clients as individuals, boards or committees are fully conscious of the part they must play in successful building.

The Press. A live Press constructively critical. A Press which constantly analyses alternative methods of building, methods of administration of contracts, and covers a wide field of information embracing all factors in modern building.

New bungalow and garage Hopton Mirfield

Architects: Firth, Son & Blackburn

Mr. Woodbine Parish

SIR THOMAS BENNETT has outlined in his paper certain features of the evolution and development of the building industry since the turn of the century, and has shown in some detail the change in pattern and resulting problems which now require urgent joint examination and solution by the industry's various leaders. This paper sets out to focus attention upon the administrative organization and chain of command by which building needs are translated into productive action and the complicated mechanism of management that exists within the industry at the present time to achieve this end.

The general layout and body of personnel constituting the building industry are highly complex, but sufficiently well known and understood to make an elaborate recital redundant. A full knowledge and realization of the general structure and detailed anatomy of the building and allied industries and the division of their various related and interrelated management functions are essential, however, to enable both architect and builder to ensure the competent conduct and smooth progress of building work. There is nothing novel about the function of management, it has been practised throughout the world since the earliest days of mankind, but its full importance as a major factor contributing to industrial stability and a high level of productivity has not always been comprehended.

These essential management functions in the constructional industries are not as clearly recognized or understood as they should be and they are seldom defined in precise terms. This lack of managerial precision and planning is one of the main causes of much of the adverse criticism so frequently levelled at those engaged in building.

The Pattern of the Building Industry

Within the building industry there are three main groups: the professional group embracing the architects who, with their specialist consultants, are concerned with the planning, design and general direction of building work, assisted by quantity surveyors in the technical auditing and accounting functions; the industrial group, covering building trades employers and sub-contractors, their craftsmen, technicians and other grades collectively concerned with organizing and conducting the main construction and assembly processes; and the commercial group embodying the producers, suppliers and distributors of building materials and components.

In addition to these three main groups there are various ancillary groups directly and indirectly in part and in whole concerned with *inter alia* the administration of central and local government regulations and controls affecting the industry; the provision of educational facilities; the conduct of research into the uses of building materials and the development of methods and techniques; the manufacture and renting of builders' plant and equipment; the provision of the several public utility services; to mention but a few. All these fragmented and diverse elements must be recognized as collectively forming the indivisible building industry.

Co-ordination of the Building Team

On each building project the personnel of the main groups require to be carefully co-ordinated and their work assigned, integrated and programmed so as to achieve an efficient and contented building team. The whole process of building needs to be continuously and competently evaluated and directed from top level by a single individual who can initiate, inspire and control all aspects of a building scheme from start to finish, delegating and devolving responsibility as and when necessary to the various members and levels of the building team but always maintaining a close direction and general surveillance of the total progress of the work.

Architecture, when the word is interpreted as meaning the work of the architect, is not an end in itself, it is but a fundamental part of the whole process of building. Good building may be defined as the detailed planning, design and assembly of a wide range of materials and components of various kinds into forms which are at once appropriate to particular conditions and needs as well as being æsthetically agreeable. This process of assembly is achieved by the accumulated skill and effort of many individuals in varying degrees of association, but all collectively forming a team with a common aim in view.

The Role of the Architect

Every association of individuals in any enterprise or field of activity needs a principal or leader at its head to ensure a successful organization. The titular head of the polygamous building team, by tradition and calling, is indisputably the architect, whose responsibilities are certainly manifold but not always manifest. The role of an architect may be defined as twofold. Primarily by training and inclination he is a creative artist. Sequentially and too often in temperamental contradistinction, he is necessarily a top-level business executive, inescapably responsible for initiating and directing the construction of his own designs. In this latter responsibility the architect should be able to rely completely and confidently upon the integrity and organizing ability of each builder with whom he associates: while the builder, for his part, should be assured that the architect will provide complete information and concise instructions in relation to his clients' needs, in such a form and sufficiently in advance of actual construction that he has reasonable opportunity, economically and efficiently, to organize and co-ordinate the work of his own staff and that of sub-contractors. The builder also should be able to anticipate that the forms of contract, so far as payment and other relevant matters are concerned, are administered by the architect in a just and business-like manner.

To understand clearly the full scope of the architect's managerial responsibility it is necessary to appreciate the impact that recent social and economic changes have had upon the pattern and development of relations within industry and commerce. The Industrial Revolution substantially altered the character of many industries, but curiously brought no major innovation to the long-established methods and practices of the building industry in this or any other European country. It is only within the past half-century that there has been any substantial change in the technical and industrial mosaic of building. Some of these changes have been referred to in Sir Thomas Bennett's paper and their impact upon the policy and practice of building management must now be carefully analysed and noted.

The Need for Unified Command

Contrary to public opinion, which is so often misled, the building industry contains many well-trained and widely experienced architects. There are untold numbers of builders and specialists, small, medium and large, well organized and equipped to undertake the ubiquitous building and maintenance requirements of the community. In the ranks of the building workers can be found some of the finest and most highly skilled foremen and craftsmen of any industry in the country. The merchants and distributors of materials have established and maintain an efficient service to the industry. It must be obvious that to be fully effective these several forces with their separate functions and immense potential capacity need to be brought closely together under a unified command.

Unlike most manufacturing industries, in building the primary management function is divided between the architect who is responsible for design and the general direction of building work, and the builder who is the architect's managing agent, responsible for the general organization and administration and construction, to which is added the burden of the financial and commercial risks involved in undertaking building work. These two essentially complementary functions are regrettably, under current circumstances, kept entirely separate until a very late stage in the planning and development of most building projects, and as a result are extremely difficult to correlate completely. It is therefore of cardinal importance that while the industry's present casual and often fortuitous system of tendering and awarding contracts exists, the basic principles of general management should be far better understood and practised by architects and all engaged under their direction, so that the level of managerial skill may be raised to that of the very high standards now existing in certain sections of industry in this country.

The Nature of Management

Much of the prevalent thought upon the subject of building management seems to be misconceived and misdirected because of the confusion between the tasks of management and the techniques of management. The confusion, which is due to an inadequate and narrow outlook on the matter, has led to dangerous assumptions, and it is therefore important to have the distinction between the task and the technique clarified. Defined in the simplest terms, the task or strategy of management is to bring about conditions under which the work of a team can come quickly and economically to good effect in the achievement of some co-operative objective. It will be realized that this definition applies to all levels and aspects of management including top-line, middle and supervisory grades, whether they be in the professional, industrial or commercial groups, jointly or severally concerned. The definition is in no way affected by the magnitude or exiguity of an undertaking or project.

The paramount task of management is to determine policy and formulate procedure, so as to establish a wholesome atmosphere in which a high standard of morale can be consistently sustained at all levels in the conduct of building operations. This feature of management in industry profoundly affects the whole range of human feeling and experience, but so often it fails to excite the interest of architects and builders and therefore enjoys little priority in their direction and conduct of building work.

[Continued on page 700

Proposed Civic Offices, Leeds

The view above shows the façade of the new development facing on to the roundabout at the junction of the inner ring road. The new central colleges are being erected on the vacant land behind the nine-storey block. The view below shows the elevations facing the back of the civic hall. Plans and models of the scheme are to be submitted shortly for consideration by the Leeds Finance and Parliamentary Committee. Architect: R. A. H. Livett, O.B.E., A.R.I.B.A., Leeds City Architect.

Mr. Woodbine Parish

The techniques or tactics of management, on the other hand, are the many detailed practices and methods of operation which each individual must master and be able to use effectively if he is to be successful in the general or specialized functions of management, be they primary, secondary or residual responsibilities.

The Importance of Human Relations

It must be obvious that everyone who is responsible for directing the productive work of others must be fully competent and knowledgeable, or alternatively well advised in the particular field or process which he is directing, but the best of his skill will inevitably be dissipated if he is unable to manage other people, command their respect and bring the best out of each member of the team that he leads. Results are only achieved through people, and this basic human fact, too often ignored, must be uppermost in the mind of every architect and builder when he has a management responsibility to perform. Working through people in this sense entails considerably more than the vague generalization that is normally in the minds of people who loosely refer to "management," because in order to manage or direct a team upon any building project and to enable it to operate at its maximum effectiveness, the individual responsible for managing it must be able to work happily and confidently with everyone be he client, builder, consultant or any other member of the building team.

Enlightened top-level management involves very much more than the simple ability to be agreeable, although courtesy and self-discipline are of the greatest moment. It is fundamental that there is a dynamic and intelligent appreciation of the separate role of each individual or group concerned in a joint venture and a capacity for establishing mutual respect and enthusiastic co-operation as well as an ability completely to control any unforeseen situation that may arise. It is significant that well trained foremen and craftsmen quickly detect a lack of managerial ability in an architect, and it is difficult, and often impossible, to ensure that respect and co-operation will not languish when indifferent or cavalier direction is experienced.

The Significance of Planned Management

The wide range of clients and building requirements, the diverse circumstances and conditions under which work is executed, the different character and size of organization, the varying degree of inter-dependence and inter-responsibility of the several partners in the building team, all tend to confuse the basic managerial issues. Until the full significance and importance of planned management in building is more fully appreciated and better understood, particularly at the top level of industry, it is doubtful whether many of the burning problems such as future architectural and building educational policy; the recruitment and training of adequate and suitable entrants to the crafts and supervisory grades; the improvement of tendering and contract procedure; the introduction of better budgetary control; the reduction of building costs; improved productivity; the development of work and method study; the greater use of mechanical plant; the better application of the results of research, can be more than tampered with. The architectural profession, trained to analyse and resolve the requirements of building owners, should not find it difficult, with the practical experience of builders, carefully to analyse and plan in detail the optimum pattern of management by which building can be more economically and successfully conducted. The British Institute of Management, with its wealth of factual experience in management practices covering a wide field of industry and commerce, could undoubtedly make a valuable contribution to any joint discussions that are initiated.

It is a grave reflection on the whole industry that although the management aspect of building work has received considerable notice and comment during the last decade, there is little cause for extravagant hopes of any major change of outlook developing in the immediate future unless some specific research is initiated without delay. The recommendations contained in the Simon Committee Report on the placing and management of building contracts, the report of the Working Party on the Building Industry, the report of the Anglo-American Productivity Team on building and the more recent report of the Joint Committee on tendering procedure set up under the chairmanship of your distinguished immediate Past President, are all signposts to action. Unhappily many of the recommendations go unheeded, for although there is universal agreement upon the need for improved management in the building industry, there has been no significant united move to date to examine in detail or to analyse the complex field of management activities in the industry, with a view to establishing an acceptable "Code of Management Practice for Building Work."

The Apparatus of Management

Management can be broadly translated as meaning the whole range of functions that are brought to bear upon solving the problems involved in transforming needs into constructive and productive action. So far as building is concerned the architect is inescapably involved in the management function from the moment that he is appointed by the building owner until the settlement of the final accounts, and his responsibilities may well extend far beyond that period of time. The production of client requirement questionnaires, plans, designs, specifications, bills of quantities, schedules, work programmes, forms of contract and sub-contract, are not final objectives, they are purely incidental instruments to achieve productive action. They are part of the whole apparatus by which general and detailed instructions are conveyed through a whole series of individuals to achieve actual building.

The chain of command starts with those who instigate at the top and goes right down to those who ultimately respond by mental and physical productive action. In building there are various chains of command, some short, some long; most are interlinked at certain points. All who form part of these various chains collectively comprise a complex group with varying degrees of contact an association with differing levels of authority and responsibility in their specialized fields. All need specific and enlightened directions from top level and co-ordinated integration within a carefully determined and detailed management plan.

The Division of Functions

It may be arguable whether one has the right to waste one's own time. There can be no possible justification for wasting the time and energy of other members of a team. Such waste is unavoidable when insufficient thought is directed towards the mechanics of management. To enable any association of individuals to operate continuously at maximum effectiveness it is necessary for a clearly defined policy to be determined at top level, with principles and procedure concisely laid down to give formal effect to such policy, so that everyone concerned has a lucid realization of his particular role.

The administrative and operational procedures may with advantage be set out upon an organizational chart indicating the general structure and division of management functions on each building project, showing the various individuals concerned, their functions, their levels of responsibility and authority and their varied interrelated contacts.

The practice of regular minuted meetings with frequent review of progress by both the architect and builder are the sole means of ensuring the necessary degree of flexibility and smooth flow of work by assessing and forecasting short-, middle- and long-term work programmes and checking actual results. The establishment of sound lines of communication and response between top-level management and everyone concerned on a building is a vital factor in the direction and control of the process of assembly, and needs to be considerably developed in the future. Too often there is evidence of failure to keep everyone advised of the general picture, and this invariably leads to discord and counter-action which militate against the streamlining of work programmes. It is not an exaggeration to say that the success or failure of a building project is, with few exceptions, a direct reflection upon the ability of the architect to exercise his responsibility in choosing with infinite care the various members who are to form each building team. This selection unhappily is far too often quite fortuitous and haphazard and not infrequently results in low individual performance, and consequent disappointment and frustration for other members of the team.

The importance of complete mutual trust and respect between client, architect and builder, and also between builder and craft worker, cannot be overemphasized, for they are the very foundations upon which the whole organization of good building depends. The elusiveness of these fundamental human qualities is the pre-eminent current dilemma facing the building industry and there can be no doubt that a marked improvement in the standards of management practice could achieve substantial reduction in building costs and a greater satisfaction for those engaged in a great and noble industry.

The Conference may wish to discuss the advisability of setting up a Study Group to examine the whole question of management practices with a view to establishing a Code of Management Practice applicable to the broad needs of the industry. It might be appropriate for the question of closer collaboration between architect and builder in the field of training and education to be discussed so that a common approach to management problems might be developed in the several syllabuses at schools of both architecture and building.

Board of Building Education

The following statement has been received from the Institute of Builders, 48, Bedford Sq., W.C.1:—

The Institute of Builders proposes to set up forthwith a Board of Building Education. The National Federation of Building Trades Employers welcomes this move and agrees that it is desirable that there should be close collaboration between the two organizations in regard to the education and practical training of the executive, administrative and managerial grades in the building industry. Such collaboration would be directed towards securing the general recognition of proper standards of training and qualifications for such personnel and towards supporting and strengthening the activities of the Institute, which has the major responsibility in this field.

To this end the Institute, with the support and collaboration of the Federation, is resolved to establish a Board of Building Education to advise on methods and standards of technical education and practical training for executive, administrative and managerial positions in building. Initially the Board will comprise not more than ten Institute members appointed by the Council, who will invite the Federation to appoint not more than eight representatives. At an early date the Board might invite representatives of professional, educational and operatives' interests to join the Board, provided that the total number of such representatives shall at no time exceed one-third of the total number of the representatives of the Institute and the Federation.

The Board will elect its own Chairman, who need not necessarily be a member of the Board. The Board will annually submit a report to its component bodies through the Institute Council, who will authorize publication. The Board may also issue from time to time interim reports and recommendations on specific matters. The Institute will appoint a secretary and other staff to the Board.

Mr. Harvey G. Frost, President of the N.F.B.T.E., speaking to the Southern Counties Federation of Building Trades Employers at the Assembly Hall, Tunbridge Wells, on May 24, said: "The decision of the Institute of Builders to set up a Board of Building Education will have a far-reaching influence on the future of our industry. That is why the National Federation has agreed to be represented on the new Board and has pledged its full support.

"For some time it has been clear that, bearing in mind the changes in practice and methods since the war, the training facilities for the executive, administrative and managerial grades in building require overhauling and extending. It is appropriate, therefore, that the Institute of Builders—whose major responsibility in this field we acknowledge—should make this welcome move to set up a body to bring this part of the industry's training system into line with current needs and to secure the general recognition of proper standards and qualifications."

A.A. School of Architecture Department of Tropical Architecture

Applications are invited from post-graduate students of architecture and qualified architects with interests in the field of building in the tropics, for the next six-month full-time Course in Tropical Architecture to be held at the Architectural Association, Sept. 26, 1955—March 23, 1956. Full details of the Course are published in the prospectus which can be obtained, together with application forms, from the Association.

The fee for the Course is £80. Studentships for the amounts shown have been donated by the following firms:

Messrs. Higgs and Hill, Ltd.: One Studentship of £100; *Messrs. John Laing and Son, Ltd.:* Two Studentships each of £50; *The Yorkshire Copper Works, Ltd.:* Two Studentships each of £50; *Messrs. Crittalls, Ltd.:* One Studentship of £50; *Messrs. International Paints, Ltd.:* One Studentship of £40.

Applicants for Studentships should apply by letter to the Principal before Thursday, June 30, 1955.

Completed application forms for admission to the Course must be submitted before Friday, July 29, 1955, addressed to: The Principal, Architectural Association School of Architecture, 34-36, Bedford Square, London, W.C.1.

R.I.B.A. Maintenance Scholarships in Architecture

The Royal Institute of British Architects offer for award in July, 1955, the following Maintenance Scholarships in Architecture, tenable from October 1, 1955:—

The Howe Green 4th and 5th year Maintenance Scholarship of £40 to enable students who have passed the Intermediate stage to complete an approved course at a School of Architecture recognized for exemption from the R.I.B.A. Final Examination.

One R.I.B.A. Houston Maintenance Scholarship of a maximum value of £125 per annum. It is available for any stage of training at a recognized School of Architecture and is awarded in the first instance for one year. It is renewable from year to year.

(The Houston Maintenance Scholarships are for the purpose of providing educational and maintenance allowances for the sons of architects and artists, who may be, or at the time of their death were, in impecunious circumstances, whether such architects or artists be alive or dead).

The Hartley Hogarth Maintenance Scholarship to provide grants towards the fees for architectural study at a Recognized School of Architecture, is available to any student or students who produce satisfactory evidence of having been resident in the Borough of Keighley for a period of 10 years prior to October 1 of the year in which the application is made. Its value will be that of the fees of the School of Architecture selected.

The Artists' General Benevolent Institution Maintenance Scholarship of a maximum of £125 per annum is available in the first instance for one year and renewable for two further periods of one year each.

(The Artists' General Benevolent Institution Maintenance Scholarship is open to orphans or sons or daughters of an architect in private practice or an artist. Applications for this Scholarship must be made by June 1, 1955, to the Secretary to the Board of Architectural Education, R.I.B.A., 66, Portland Place, London, W.1).

An R.I.B.A. 4th and 5th year Maintenance Scholarship of £60 to enable a student who has passed the Intermediate stage to complete an approved course at a School of Architecture recognized for exemption from the R.I.B.A. Final Examination.

The Ralph Knott Memorial Maintenance Scholarship of a maximum value of £45 per annum (tenable only at the School of Architecture, The Architectural Association, London).

The Scholarships are intended to enable promising students, whose parents or guardians have not the necessary means, to attend approved courses at the Schools of Architecture recognized for exemption from the R.I.B.A. examinations. Students already taking such a course are also eligible to apply for a Scholarship. The Scholarships are available only for students who are British subjects by birth or naturalization.

The value of the Scholarship up to the limits stated, will depend on the financial circumstances of the parents or guardians of the candidate. The parents or guardians will be required to furnish particulars on the proper form of their financial position.

Applications for the Scholarships (in accordance with the regulations for applications) must be made to the Secretary to the Board of Architectural Education, R.I.B.A., 66, Portland Place, London, W.1. The closing date for the receipt of applications, duly completed, is June 29, except in the case of the Artists' General Benevolent Institution Maintenance Scholarship, the closing date for which is June 1. The awards will be announced towards the end of July.

City and Guilds Courses in Concrete Practice

The course in Concrete Practice established by the City and Guilds of London Institute in 1954, has now been extended into a second year for the benefit of those students who wish to gain a more advanced knowledge of the subject.

The second-year course is planned on the same basis as that for the first year, viz., one two-hour evening lecture per week for a period of 24 weeks, and will come into operation from the commencement of the college session 1955-56. An examination, consisting of a written paper and an oral test, will be held in May, 1956, and certificates (Grade II) will be awarded to successful candidates. Students will normally be expected to have completed successfully the first-year course before entering for the second-year course.

Full particulars of the course can be obtained in pamphlet form from the City and Guilds of London Institute, Department of Technology, Gresham College, Basinghall Street, London, E.C.2, price 6d.

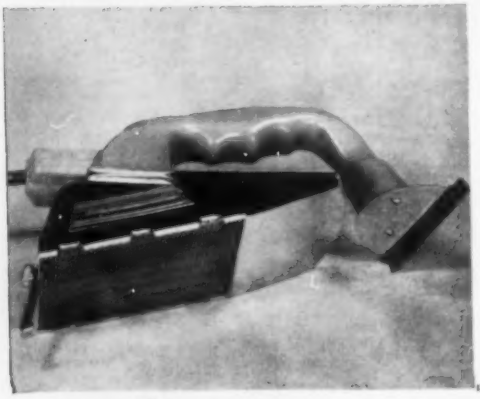
MOSAICS

SERVICES

WATER HEATING

B6/32

This new diesel oil-fired domestic boiler has recently been marketed by Perkins C.M.E. Ltd. of Mansfield Rd., Derby. Fitted with the "Mighty Atom" oil burner it has been specially designed for both small and large houses. The boiler has a heating surface of 17.5 sq. ft. and a B.Th.U. capacity of 76,500 B.Th.U.s. per hour: it is capable of heating 500 sq. ft. of direct radiating surface or 430 lineal ft. of 4in heating pipe. Continuous burning at ½ pt. per hour of oil at minimum flame and 5 pints per hour at maximum flame. Constructed of steel boiler tubes and plate—galvanized after manufacture and tested to 60 lb per sq. in. after galvanizing. Thermostatic control.



PLANT

HAND & BENCH TOOLS

E3/39

The latest electric paint stripper of Skarsten Manufacturing Co. Ltd., 21 Hyde Way, Welwyn Garden City, Herts. incorporates a number of improved features. By pressing the spring-loaded button at the base of the handle grip, the handle can be detached leaving a dry scraper for smooth finishing on plaster walls, wood, etc. With the heating unit attached paint is softened by the electric heating elements; the scraper hook then follows down and leaves a smooth surface which is ready for repainting without further dressing down. The heating unit can be adjusted according to the number of coats or the type of material to be removed. Size: 9in x 3½in. Weight: 26 oz. Power consumption: 500 watts.

PLANT

HAND AND BENCH TOOLS

E3/40

The "Uno" electric branding iron is heated by elements diffusing a constant and equal heat over the whole surface of the brand, thus ensuring a clear impression on any brandable material, including rubber, felt, fibre or card cartons. There are three sizes of brand area available 7in x 3½in, 7½in x 2in and 6in x 2in and these can accommodate a fairly wide range of brand plate designs. The irons can be supplied with thermostatic control and auxiliary equipment includes floor stand and muff, bench stand and muff, both designed to keep the iron in a safe place when warming up and while awaiting use at full heat. A warning indicator lamp and switch can also be supplied. Manufactured by the Uno Co. Ltd., 90 Minories, London, E.C.3.

SERVICES

SPACE HEATING

B3/69

The "Glowfire" continuous burning fire has been produced by Joseph Bloomer & Sons Ltd., Ladysmith Road Foundry, Cradley, Staffs. It has been designed to give maximum radiation and the shallow front gives warmth at hearth level. The safety plate can be used as a trivet. Constructed from cast iron the fire has a vitreous enamel finish. When lighting, the ashpan cover should be fully opened until the fire is completely alight. The cover should then be fixed and the air control set. Suitable for most solid fuels.

INDUSTRIAL NOTES

● £500 in prize money is offered in a competition run by Nuralite Sales, Ltd., of 3-4, Whitehall Place, Gravesend, Kent, the manufacturers of Nuralite, the non-metallic roofing material. The object of the competition is to obtain a descriptive name for the Nuralite "man," which is their advertising character. Entries will only be accepted on the official entry forms, which are available from all Nuralite stockists, the closing date for entries is August 20, 1955.

The prize money is to be divided into a first prize of £300, a second prize of £100 and a further prize of £100 for the stockist who supplies the form on which the winning entry is received.

Judging will be carried out by the Directors of Nuralite Sales, Ltd. It is hoped to present the prizes on the Nuralite Stand at the Building Exhibition in November.

● Metal Industries, Ltd., announce the appointment to the Board of Mr. J. O. Knowles, Chairman and Joint Managing Director of Brookhirst Switchgear, Ltd., and Mr. J. T. Rymer, Managing Director of Sentinel (Shrewsbury), Ltd. The appointment to the Board is also announced of Sir Charles Westlake, at present Chairman, Uganda Electricity Board.

● Delegates representing Subscribers in eight countries will be present at the second Annual Conference of the Fibre Building Board Development Organisation, Ltd., to be held at the Continental Hotel, Oslo, on June 7 and 8.

● British Insulated Callender's Cables, Ltd., announce that Mr. H. Thomson has been appointed their Branch Manager, Glasgow.

● At the annual general meeting of the British Electrical Development Association, in the Savoy Hotel, London, to-day, the Right Hon. Viscount Chandos, D.S.O., M.C., was appointed President of the Association for the year 1955/56, in succession to Sir John Hacking, M.I.E.E. The Right Hon. Thomas Johnston, C.H., LL.D., J.P., F.E.I.S., Chairman of the North of Scotland Electricity Board, and the Right Hon. Lord Hurcomb, G.C.B., K.B.E., Comp.I.E.E., were appointed Vice-Presidents for the three years 1955/58. At the first meeting of the new Council of the Association, Mr. C. F. King, Chairman, East Midlands Electricity Board, was elected Chairman of the Council, and Mr. D. Bellamy, O.B.E., D.L., F.A.C.C.A., F.C.W.A., Comp.I.E.E., F. S. S., F.Econ.S., Chairman of the Yorkshire Electricity Board, was elected Vice-Chairman of the Council.

● Mr. J. G. Holmes, B.Sc., A.R.C.S., F.I.E.S., chief technical officer Holophane, Ltd., has been elected hon. secretary of the Illuminating Engineering Society for the 1955-56 Session.

● Mr. F. Anderson, A.M.I.C.E., who has been in charge of the Scottish Office of the Cement and Concrete Association at 2, Rutland Square, Edinburgh, since 1935, retired on June 1 after twenty-eight years service. Mr. Anderson is succeeded by Mr. Peter Russell, B.Sc., A.M.I.C.E., M.Inst.H.E.

● With effect from June 1, 1955, the address of Secomastic, Ltd. is now Western Road, Bracknell, Berkshire, telephone Bracknell 910, telegrams Secomastic-Bracknell.

PILKINGTON'S

"ARMOURPLATE" Glass Doors

make the most inviting entrances

These are the doors for the business that wants to be in the public eye. Fitted into a fashionable shop front or a dignified office lobby, they help to bring a message out on to the pavement . . . arresting the eye, guiding the step. "ARMOURPLATE" Glass Doors are supplied in two sizes and with a choice of contemporary fittings. For full details write to:—

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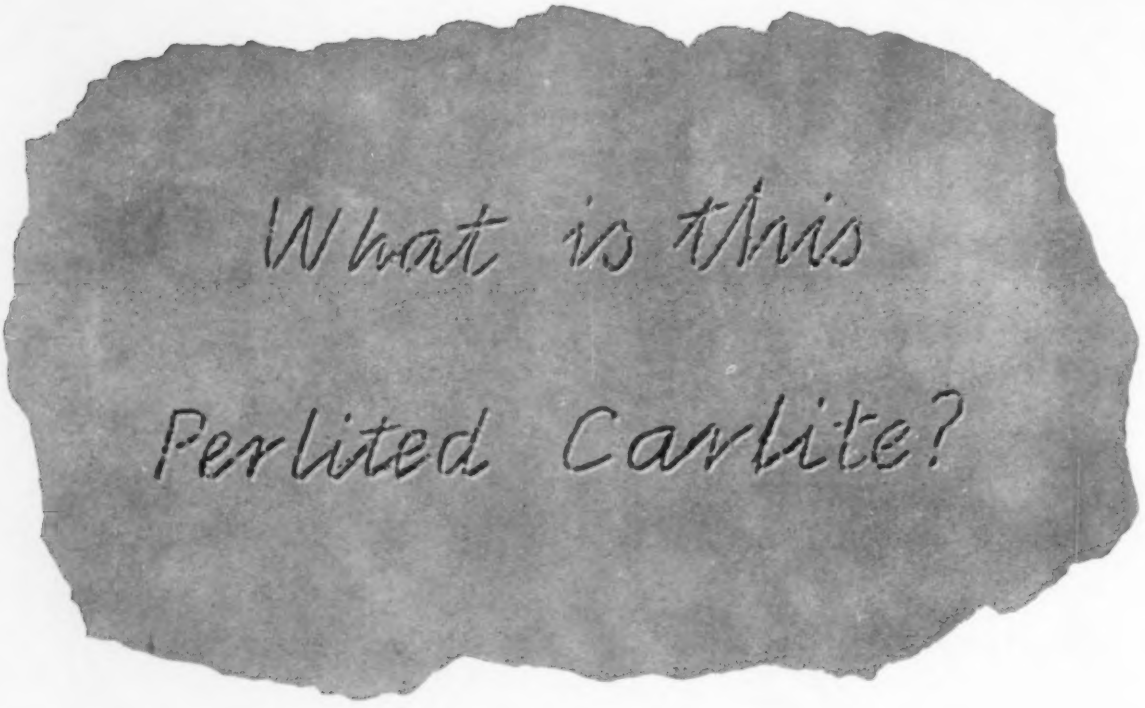
CONSULT THE TECHNICAL SALES AND SERVICE DEPARTMENT, ST. HELENS, LANCS. (TELEPHONE: ST. HELENS 4001), OR SELWYN HOUSE, CLEVELAND ROW, ST. JAMES'S, LONDON, S.W.1. (TELEPHONE: WHITEHALL 5672-6). SUPPLIES ARE AVAILABLE THROUGH THE USUAL TRADE CHANNELS.

ADA14

"ARMOURPLATE" IS A REGISTERED TRADE MARK OF PILKINGTON BROTHERS LIMITED.



The best news architects, builders, contractors have had for many a day. It's a pre-mixed plaster with a new aggregate giving prodigious advantages.

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CURRENT MEASURED RATES (LONDON)

These apply to new work of normal character and some size. These rates are for time and materials only and carry 10 per cent in excess, so the appropriate essential on-costs should be added. The basis cost of material used in the calculation of these prices is taken from the foregoing tables which carried up to May, 1955.

ESSENTIAL ON-COSTS

Fees payable to L.C.C. for District Surveyor:	
For new buildings of ordinary construction exceeding 5,000 cubic feet, for every 1,000 feet or part of same up to 1,000,000 cubic feet 1/6, together with an additional sum of £1/10/- ..	£1/10/- *at* + 1/6
After which allow per 1,000 do.	*at* + 9*d.*
For alterations and additions:	
When £100 the sum of £2/10/-, plus 12/6 for every £100 or part of same, up to £1,000 ..	£2/10/- *at* + 12/6 per 100
When over £1,000 the sum of £8/2/6, and for every £100 or part of same beyond 3/- ..	£8/2/6 *at* + 3/- per 100
Public buildings: Fees as above but plus 50% ..	+ 50%
Fees in respect of means of escape in case of fire are 1/5th of the above or £2 if greater or in the case of a one-storey building £1	1/5th
Steel framed or r.c. buildings double	+ 2

Allowance to cover National Insurances, Holidays with Pay and Public Holidays, Welfare, Third Party Risk, Travelling and Guaranteed Week is made in the rates attached to the items.	
Allow for Fire Insurance do.	1/6%
Allow for Water for use on the works and apparatus do.	6/6%
Allow for hoarding, or similar licences in City of London	say £10
Do. under Borough Councils per each month ..	say 2/6
Allow for Office, Fire, Attendance on C. or W., etc., p. week	say £1

Supervision, etc., assessment	Contract value £4,000	£6,000	£12,000	£24,000	£50,000
Cost of admin. ..	6%	5%	5%	4¼%	4¼%
Agent or foreman (each)	5%	4¼%	3¼%	2¼%	1¼%
Timekeeper or Watchman (each) ..	2¼%	2¼%	1¼%	1%	¾%

SPOT ITEMS AND DEMOLITION, ETC.

	Per foot run
Hoarding erected and removed	18/-
Planked gangway with handrail, etc. do.	9/6
Proper gantry do...	70/-
Sleeper roadways	15/-
Needling, strutting and shoring including all labours and use and waste in erection and removal	Per foot cube 18/-

ALTERATION-DEMOLITION—	1 Brick Per	1½ Brick foot	2 Brick super	Per yard cube
Cutting out cement concrete or brickwork in small quantities ..	1/3	2/4	3/2	57/-
Do. if either in very small quantities or reinforced	2/1	3/8	5/3½	84/-
Debris into baskets and removed from inside to outside of bldg. ..	3½d.	7d.	8½d.	12/2

SCAFFOLDING (Avg. 45 ft high)

Per yard superficial	Period 1 month	3 months	5 months
Putlog type—4′ 6″ lift	5/6	7/6	9/7
Do. —6′ 0″ do.	4/1	5/8	7/3
Independent type—4′ 6″ lift.. ..	7/1	10/3	13/5
Do. —6′ 0″ do. ..	5/1	7/4	9/3

EXCAVATION Per Yard Cube. *By hand*	Common Soil	Loamy Clay	Gravel or Clay	Rock or similar
Reducing levels	5/7	6/9	7/11	53/-
Surface trench not exceeding 5ft deep ..	11/7	13/10	18/6	66/-
Do. from 5ft to 10ft ..	21/3	23/11	28/7	72/-
Do. from 10ft to 15ft ..	26/5	29/1	33/7	79/-
Fill in and ram	4/7	5/1	5/1	5/1
Barrowing 25 yds.	2/8	2/11	2/11	3/4
Load vehicles and tip 8 miles away	15/-	15/-	15/10	16/6

PLANK AND STRUT	To 5ft deep	5 to 10 ft deep	10 to 15ft deep
To trenches, in normal ground			
Per Foot Super	5½d.	6½d.	8d.

CONCRETE 1½in. Ballast Aggregate	Per yard cube
1 : 3 : 6 Cement concrete in foundations	71/6
Do. around grillages	74/6

REINFORCED CONCRETE

1 : 2 :4—¾in. concrete, worked around reinforcement, between formwork in the following (at various levels):—	Per cubic Yard
Foundations and surface beds	79/-
Walls, 12in. thick or more	85/6

Sectional inches	Lintols and beams	Columns and casings	Braces and projections	
Up to 36	4/3	4/6	4/8	Per cubic ft
36 to 72	4/-	4/4	4/1	do.
72 to 144	3/10	3/11	4/1	do.
over 144	3/8	3/10	4/-	do.
Walls 6in thick			16/2	Per super yd
Do. 9in thick			24/3	do.
Suspended floors average 6in. thick			17/1	do.

REINFORCING RODS (round) bent and placed— Per cwt	¼in	⅜in	½in	⅝ to 1in
In floors and beams ..	78/-	71/-	66/-	60/-
In walls	83/6	75/6	69/9	62/11
In columns	89/-	80/-	73/6	65/10

FORMWORK and Supports (4 times use)— Floor soffits 18/3 per Yard	Beams 2/5	Walls 2/3	Columns 2/3	per super foot

BRICKWORK

BRICKWORK per YARD superficial reduced to ONE BRICK in thickness (scaffold to add)—	In 1 : 3 cement mortar
Flettons or other similar *at* 113/- per 1,000 ..	38/8
Mild Stocks or do., *at* 221/6 per 1,000 ..	51/10
Second Stocks or do., *at* 256/6 per 1,000 ..	55/7
Southwater engineering or similar bricks, *at* 370/- per 1,000	73/-
Blue Staffordshire wire cut *at* 462/- per 1,000 ..	81/2
Deduct if 1 : 1 : 6 Cement-Lime mortar is used in lieu of 1 : 3 Portland Cement mortar	2*d.*
Add if brickwork commences above ground level	3/11
Do. if in backing to masonry including cutting and waste for bonding	3/-
Do. If circular-on-plan	7/1
Do. If in underpinning	7/1

BRICKWORK IN THICKNESS NOT REDUCED— Per yard superficial	Brick, on edge walls	Half-Brick walls	1 Brick finished fair both sides	11″ Hollow with 2″ cavity and G.I. ties
In Flettons or similar ..	16/7	21/2	39/2	44/9
In second stocks or do.	21/9	28/9	53/8	59/6
Add: for pointing as work proceeds, per side	1/7	1/9	1/7	1/7
Thickness to old walls, including cutting, toothing and bonding to same an average total thickness of ¾ brick		Fletton 55/-	Stock 65/-	Per yard super
Do. all as last but an average total thickness of 1½ bricks ..		71/8	93/1	do.

WALLS BUILT IN SUPERIOR BRICKS— In 1 : 3 Cement mortar, fair faced and pointed on both sides as the work proceeds:—	Half-Brick	One Brick	
In first quality Stocks at 272/-..	34/11	62/-	Per yard super
In red facings at 290/- ..	35/-	62/2	do.
In bluepressed facings at 509/6	50/7	93/5	do.

GENERAL AND SUNDRY—		
Cut tooth and bond new brickwork to old		4/7 per ft
Damp proof course, double slate, horizontal ..		3/3 super
Do., as last, but vertical		4/- do.
Do., bitumen, Hessian base, do.		1/9 do.
Frames, bed and point in cement mortar, one side		4½*d.* per ft. run
Window board of 6″ × 6″ × ¾″ rounded on edge quarry tiles, bedded, pointed, cut and fitted ..		3/2 do.
Terra cotta air bricks built in and pointed, including flue	9″ × 6″ 5/3	9″ × 9″ 9/6 each
Chimney pots, plain red, set and flaunched in cement mortar ..	1ft high 13/6	2ft high 19/9 each
Metal windows, assembled, hoisted and fixed, lugs cut and pinned and frames bedded and pointed one side in cement mortar.. ..	Up to 5ft super 11/10	5ft to 10ft super 14/10 each
	10ft to 20ft super 23/-	20ft to 40ft super 38/- each
Leaving holes through walls for pipes and afterwards making good ..	Small pipes 3*d.* per in in depth	Large pipes 6*d.* per in in depth
Cutting do., and afterwards do. ..	10*d.* do.	1/8 do.
Cut mortices in brickwork or concrete for bolts or dowels and run in with cement grout		1/1½ per in in depth, each
Holdfasts of stout iron hoop bent holed and screwed to frame and built in ..	1/3 each	

MEASURED RATES—*Continued*

BRICKWORK—*Continued*

FACING—

Extra only over common brickwork (113/- per 1,000) for facing with superior bricks in *Flemish bond* and pointing as the work proceeds.

Rustic Flettons (138/-)	3/11 per yard super
White (200/-)	8/7 do.
First Stocks (272/-)	13/7 do.
Reds (290/-)	14/10 do.
Blue pressed (509/6)	37/- do.

If built in English bond, *Add* 10% to above
If do. half-brick stretcher bond, *Less* 25% off above

COPING—

All labour and material in forming brick-on-edge coping with two course of roofing tiles under and cement weather fillets on both sides, built in cement and pointed as the work proceeds.

Per foot run	9" thick	14" thick
In picked Flettons	6/3	8/5
In first quality Stocks	7/7	11/1
In red facings	7/5	10/11

Plumbing angles	2*d.* per foot run
Fair cutting	11½*d.* do.
Fair raking cutting	1/6½ do.
Fair circular cutting	1/6½ do.
Fair squint or birdsmouth	1/10½ do.

ARCHES

Extra over Fletton brickwork for forming window head with red facing bricks set on end and with 4½" soffits and pointing	foot run 3/6
Do. for rubbed and gauged flat arch in red rubbers set in putty with fine joints	foot super 18/-

PARTITIONS

(over 100 Yards)	Per yard super— 2in.	2½in.	3in.
Concrete slab partitions in cement mortar	10/-	11/4	14/2
Hollow clay do.	12/3	13/2	14/7
Cutting and bonding at angles, intersections and ends	5*d.* foot run		

PAVING

	1in	1½in	1½in	
Grano trowelled gauge 5 : 2	8/-	9/-	10/-	yard super
1×5in skirting, square top and cove bottom			2/8	foot run
½in×6in red quarry tile paving			27/-	yard super
½in×6in do. skirting			1/10	foot run
Jointless flooring, ½in thick			20/-	yard super

ASPHALTE (normal conditions and fair quantity)

½in pitch mastic floor in one coat on felt underlay on prepared concrete base

	B.S. 1450/48	B.S. 1375/47	
	Black	Brown	Red
Per yard super	12/6	13/2 Mastic	15/- Natural Rock
	Unit	B.S.988	B.S.S. 1162/44
½in in two thicknesses on felt underlay on prepared concrete base	yard super	17/-	22/6
Ditto in narrow widths	foot super	2/6	3/6
½in skirting 6in high, angle fillet at bottom splayed and turned in at top	foot run	3/-	3/6
External angles	each	6*d.*	6*d.*
Internal *ditto*	each	10*d.*	10*d.*
Tanking or Damp Course		B.S.1097/43	B.S.1418/47
Vertical in two thicknesses	yard super	22/6	32/-
½in horizontal *ditto*	yard super	15/-	23/6
Vertical in three thicknesses	yard super	32/-	39/-
1½in horizontal *ditto*	yard super	21/-	30/6
Labour rounded external angle	per foot run	6*d.*	6*d.*
Ditto internal angle fillet	per foot run	10*d.*	11*d.*
Ditto double *ditto*	per foot run	1/8	1/8
Collars to small pipes	each	3/6	4/-
Ditto to large pipes	each	6/6	8/-

DRAINAGE

Excavate trench, and plank and strut to sides, consolidate bottom to fall, return fill and ram earth after drain is laid, and load and remove surplus. In ordinary ground—moderately firm

Per lineal yard	
1 foot in depth	4/4
2 do.	7/6
3 do.	17/8
4 do.	23/7
5 do.	29/4
6 do.	39/6
7 do.	48/-
8 do.	61/-
9 do.	71/-
10 do.	86/9
11 do.	98/5
12 do.	111/-

Portland cement (1 : 6) concrete bed under drain pipes and benching up on both sides—6in thick

Per yard run 4in	6in	9in
18in wide	20in wide	23in wide
5/7	6/6	8/1½

SALT GLAZED SANITARY DRAIN PIPES

and lay and joint with Yarn and Cement Mortar in trench.

Quality	Quantity	Per foot run 4in	6in	9in
"Best"	2 Tons or more	2/6	3/7	6/1
	over 100 pieces	2/9	4/1	6/10
	under 100 ditto	2/10	4/3	7/4
"Best Tested"	2 Tons or more	3/1	4/5	7/8
	over 100 pieces	3/7	5/4	9/1
	under 100 ditto	3/10	5/7	9/7
"British Standard"	2 Tons or more	2/8	3/11	6/7
	over 100 pieces	3/1	4/5	7/8
	under 100 ditto	3/3	4/8	8/-
"British Standard Tested"	2 Tons or more	3/3	4/9	8/1
	over 100 pieces	4/1	6/-	10/6
	under 100 ditto	4/2	6/3	10/11
Extra for bends "Best"—Contained in 2 Ton lots.		3/10	5/7	15/8
Extra for junction "Best"—4in. on 4in, 6in on 6in—9in on 9in	ditto	6/-	8/9	25/6

IRON DRAIN PIPES—

	Per foot run 4in	6in
Heavy cast iron socketed and laying and jointing in molten lead—		
In main runs	11/2	15/-
In branches	12/6	17/-
	each	
Extra over last for bends and extra joint	34/-	57/-
Do. on do. for junctions and extra joint	45/6	79/-
Cast iron gulley with 10½in inlet and 4in outlet, composed of hooper and trap, and 9in extension piece and 10½in grating, and jointing all together, and jointing to drain and surrounding in concrete	131/-	—
Do. rain water shoe with vertical inlet and inspection cover, and joint up and embed.	65/6	115/-

MANHOLE SUNDRIES—

		4in	6in
Salt glazed straight half-round main channels	each	5/-	7/-
Do. curved	do.	10/6	15/-
Do. three-quarter section splayed channel bends (Barrons or similar)	do.	13/9	19/10
Heavy manhole steps galvanized	do.	9/3	—
Fix only manhole covers	do.	11/-	—
4in Mica flap, brass faced, f.a.i. valves and fix with molten lead joint	do.	38/6	—

ROOFER

CORRUGATED ASBESTOS SHEETS

P.C. 6/8½ per super yard, including side and end laps and fixing to wood	135/6 per square
Eaves filler pieces	1/9 foot run
Adjustable ridge	3/4 do.
Barge boards	2/8 do.
Plain roofing tiles, machine made, sand faced, 4in gauge nailed every 4th course with 1½in galvanized nails, to battens (measured separately)	236/- do.
Extra over last for top edge or abutment cutting	1/2 do.
Do. for double course at eaves	2/4 do.
Do. for verges, undercloak, bed and point	3/4 do.
Do. Valley tiles including cutting and waste on both sides	10/6 do.
Do. Bonnet hips and do. bed and point	11/- do.
Half-round ridge and bed and point	3/- do.
Fixing soakers	1/6 dozen

Bituminous felt roofing in two layers, laid breaking joint and bedded with hot mastic and finished with fine dry grit — 11/- yard
Do. but in one layer only — 8/- super

WELSH SLATING—	Per square 16"×10"	18"×10"	20"×10"
3in lap, 2 zinc nails to each slate	297/-	303/-	354/-

Additional labours	Per foot lineal—		
At tops, verges and abutments—straight	1/6	1/8	1/10
Do. —raking	2/3	2/6	2/9
At hips and valleys (each side)	2/3	2/6	2/9
At eaves, double course	3/-	3/3	3/8
Do. to falls	4/6	4/10	5/6

Zinc roofing

Architects: Messrs. Challen & Floyd, A/ARIBA.

House at Woodford Green

These illustrations show an interesting example of Italianized zinc roofing applied to a modern house. By this system, the sheets are factory formed: site work is cut down to a minimum, and roofs can be rapidly covered.

From roof to foundation, zinc has vitally important uses in contemporary building — for gutters, pipes, weatherings, flashings and hoods. And there are now no restrictions on its use. Supplies are plentiful, and likely to remain so.

The price of zinc has dropped considerably, and it is now one of the cheapest permanent materials.

The Zinc Development Association is always prepared to give technical help to potential users. Publications, together with lists of stockists of all zinc building materials and of firms specialising in zinc work, are freely available.

View showing contour of Italianized sheets.

Flashing round chimney stack.

Detail of verge apron.

Think Zinc (Zn)

MEASURED RATES—*Continued*

FLOORS AND FLATS

Hollow tile in situ or precast units hoisted, bedded and fixed—

Superimposed load in lb per foot super	Span 12 feet	Span 16 feet
50 ..	44/-	50/3
Per yard super. 100 ..	45/9	53/-
150 ..	49/6	56/3

20lb has been allowed to cover dead load in surface finish.
Fair edge to slabs .. .. 9*d.* per foot run
Splay cutting and waste .. .. .. 1/9 do.

CARPENTER AND JOINER

SOFTWOOD CARCASSING—

Labour, materials, waste nails, hoisting and fixing	Plates per foot cube— 18/9	Joists 20/-	Rafters 21/6	Trusses 24/-

FLOORING— Per square—	¾in	1in	1¼in
Rough boarding	131/-	161/-	198/-
Softwood matchboarded flooring, straight joints, splayed headings	132/7	162/6	200/-
Do. grooved and tongued	162/-	192/6	237/-

SKIRTING Per foot superficial—	¾in	1¼in	1in
Wrot softwood moulded skirting with grounds and backings plugged ..	3/6	4/1	4/8

Mitres to do. .. 3*d.* per sectional inch.
Fitted ends .. 2*d.* do.

SASHES, fanlights, casements, borrowed lights, etc.—

Per foot super—	Without bars	With bars (2ft sup. in each square)
2in softwood rebated, moulded and fixed	3/-	5/3
Add if fitted with beads	6*d.*	1/6
Add if hanging on butts	2/3 each	

WINDOWS, hung on lines—
Softwood cased frames, 1in inner and outer linings, 1¼in pulley stiles, 2in sashes, oak sill.

Per foot super.	Overall size of frames— 6ft	21ft	32ft	44ft
Window as described	17/7	9/8	7/6	5/10
Add if sashes in squares, about 2 feet super in each	—	1/6	2/-	1/11
Extra for hanging sashes with lines, weights and axle pulleys	each 30/6	50/-	62/-	84/-

FINISHINGS TO OPENINGS—	Per foot super— ¾in	1in	1¼in	1½in
Softwood linings, tongued at angles and tongued to frame including grounds and backings	3/5	3/11	4/9	5/4
Add if crosstongued	6*d.*	6*d.*	6*d.*	6*d.*
Softwood wrot rounded on front edge and with tongue at back window board including groove in sill and bearers	3/4	3/9	4/8	5/2
Add for ends to last notched, returned and rounded	1/1	1/2	1/3	1/4

Per foot run—	Sectional area in inches— 1	2	3	4	5	6
Softwood wrot and fixed in bearers, backings, grounds, fillets, and similar	3½*d.*	6*d.*	8½*d.*	11*d.*	1/1½	1/3½
Add if in short lengths ..	2*d.*	2*d.*	2½*d.*	2½*d.*	3*d.*	3*d.*
,, if plugged to brickwork	4*d.*	4*d.*	4*d.*	4*d.*	4*d.*	4*d.*
,, if framed as in legs and bearers	3*d.*	3*d.*	4*d.*	4*d.*	6*d.*	6*d.*
,, if rebated or grooved or beaded	½*d.*	½*d.*	½*d.*	½*d.*	½*d.*	½*d.*
,, if chamfered or rounded edges				1½*d.*		
,, if moulded in architraves, capping, etc.				3*d.*		

DOOR FRAMES— Per sectional inch—	Per foot run— 6in	8in	10in	12in	13½in
Softwood, wrot, rebated, rounded framed and fixed	2/1	2/5	2/11½	3/3½	3/6

DOORS—Per foot super.	Number of panels— 1	2	3	4	5	6
2in. Softwood, square framed and flat panels, both sides, on butts ..	5/6	6/6	7/-	7/9	8/-	8/9
1½in do.	4/8	5/6	6/-	6/7	6/10	7/4
Add for each side moulded	4*d.*	5*d.*	6*d.*	7*d.*	8*d.*	9*d.*
Add for do. flush panelled..	8*d.*	8*d.*	8*d.*	6*d.*	7*d.*	7*d.*

per foot super—	¾in	1in	1½in	1¾in
In shelves, table tops, wrot and fixed	2/4	2/7	3/-	3/6
Do. in divisions and ends framed ..	2/7	2/10	3/3	3/11
Add if crosstongued	6*d.*	6*d.*	6*d.*	6*d.*
Add if buttoned	6*d.*	6*d.*	6*d.*	6*d.*

SUNDRIES—Per foot run ..	In short lengths	In long lengths	Add for cups and screws
Glazing, beads mitred around and fixed with brads ..	6*d.*	4*d.*	2*d.*
Rounded heel or hollow ..		4*d.*	
Tongued and grooved angle		6*d.*	
Glue blocking		6*d.*	
Mitres	3*d.*	per sectional inch.	
Fitted ends	2*d.*	do.	

STAIRCASE—	Per ft Super
1¼in Softwood treads with moulded nosings, 1in risers tongued both edges and glued, blocked and bracketed on and including two fir framed carriages	5/3
Do. but in winders	6/6
1¼in crosstongued landing on framed carriages ..	5/3
2in moulded string	5/-
2in do. ramped	11/6
Ends framed to newel	9/6 each
Tongued and mitred angles	5/3 do.
Tongued heading joints	5/3 do.
Ends of treads and risers housed to string	3/6 do.
Extra for curtail ends to steps, glued up and veneered riser and solid blocking	100/- do.
Balusters about 2ft 9in long, square and framed each end .. .. .. each	1in 3/8 / 1¼in 4/4 / 1¼in 4/11
3½in × 3½in square newel, framed	4/- per foot run
African mahogany moulded 3in × 2in handrail. (Joints below)	8/9 do.
Do. ramped 18in girth (do.)	52/- each
Do. wreathed do. (do.)	155/- each
Joint or framed ends	11/- each

FIXING ONLY IRONMONGERY	To deal	To hardwood
Barrel bolts	1/8	2/6 each
Flush bolts	4/-	4/10 do.
Sash fasteners	3/2	2/10 do.
Rim locks and furniture	5/4	6/9 do.
Mortice locks and do.	10/9	16/9 do.
Cupboard locks	2/9	3/5 do.
Casement fasteners	2/3	2/9 do.
Do. stays	2/3	2/9 do.
Grip handles	2/7	3/5 do.
Spring catches	2/3	2/9 do.
Cabin hooks	1/10	2/5 do.
Floor springs including oil	46/-	58/- do.
Overhead springs	13/8	16/- do.
Springhinges	10/9	13/- do.

SMITH AND FOUNDER

Basis framed steel joists and hoist and fix	68/- per cwt.
Do. but in compound girders ..	75/- do.
Do. but in stanchions	76/- do.
Trusses	105/- do.
Additional cost per cwt. over basic sections for following R.S.Js. 9in × 7in, 10in × 8in, 12in × 8in, 14in × 8in, 16in × 8in, 18in × 6in, 18in × 7in, 20in × 6½in, 20in × 7½in..	7d. per cwt.
22in × 7in, 1/1 cwt. 4in × 3in	1/8 do.
5in × 3in, 5in × 2½in	2/- do.
6in × 3in, 24in × 7½in	2/3 do.
3in × 3in, 2/9 cwt. 4½in × 1½in ..	3/7 do.
3in × 1½in	3/11 do.
Cleats, brackets, packing pieces, etc., in connections, including rivets and bolts	150/- do.
Forged straps	108/- do.
Wrot iron balustrade	145/- do.

RAINWATER GOODS—

Round cast-iron pipe with socketed joints caulked with red lead and tow and fixing with pipe nails and gas barrel distance pieces to plugs in brickwork	Per foot lineal 2in 3/9	3in 4/2	4in 5/4
Extra for shoes .. .. .. each	5/3	6/8	9/7
Do. junctions .. .. .. do.	7/11	10/1	14/7
Do. bends .. .. .. do.	6/2	7/11	10/2

RAINWATER GUTTERS Per foot run—	4in	5in	6in
Half round CI gutters jointed in red lead and bolted and fixed on iron brackets	3/6	4/2	5/2
Ogee do. All as last	3/11	4/7	5/9
Extra for stop ends	3/2	3/10	4/5
Do angles or outlets	5'4	6/9	8/-

MEASURED RATES—*Continued*

PLUMBER

EXTERNAL—	Soakers	Flats	Flashings
4lb Milled Sheet lead per cwt	178/-	213/-	223/-

LEAD PIPES: running joints, etc.

Per foot run	½in	¾in	1in	1¼in	1½in	2in
Main } Fixed	5/-	7/3	9/11	12/9	16/3	21/11
Service } with	4/7	6/5	8/3	10/3	12/11	17/7
Waste } hooks	3/2	4/5	5/8	6/11	9/1	11/6
Bends each	—	—	—	1/9	3/-	8/-
Solder joints ,,	8/2	10/-	11/11	13/8	16/-	21/-
Union and joints ,,	12/10	16/5	18/6	24/6	—	—
Stop valve and *ditto* ,,	28/11	37/7	51/10	80/9	—	—
Bib valve and *ditto* ,,	20/8	28/-	—	—	—	—
Ball valve and *ditto* ,,	22/6	31/7	49/5	71/11	—	—
Sleeve and *ditto* ,,	—	—	—	—	21/3	28/9

COPPER TUBES

	½in	¾in	1in	1¼in	1½in	2in
Tubes per foot run ..	2/7	3/3	4/5	5/4	6/3	9/3
Couplings: straight each	3/2	4/-	5/11	7/9	9/11	13/4
Do. Bends each ..	6/3	7/6	10/7	14/4	21/5	29/7
Do. Tees ,, ..	7/5	8/8	12/7	17/2	23/2	32/5
Do Cisterns ,, ..	4/2	5/6	7/3	9/3	12/10	16/10
Stop cocks ,, ..	23/-	33/-	60/-	100/-	152/-	230/-

BLACK TUBING (Class C) fixed with pipe brackets	½in	¾in	1in	1¼in	1½in	2in
Tubes, per foot run ..	1/9	2/1	2/7	3/3	3/10	5/1
Bends and fix, each ..	3/10	4/7	5/7	7/3	8/2	12/8
Tees and *ditto*	4/-	4/9	5/9	7/5	9/-	13/4
Fire bends	1/5	1/9	1/10	2/1	2/9	4/10

Coated iron (M) weight L.C.C. soil and waste fixed with nails and distance pieces and molten lead joints	2in	4in	
.. ..	5/-	7/2	foot run
Extra only for bends and joint ..	13/10	22/2	each
Do. junctions and joints	15/4	27/7	do.
Do. cleaning doors	14/4	15/8	do.
Domical wire guards	2/6	2/9	do.

PLASTERER—			yard super
Lime and hair	½"	Render and set	6/4
Do.	¾"	Ditto float and set	8/-
Sirapite	½"	Skimming coat	3/10
Do.	½"	Render and set	7/8
Do.	¾"	Render float and ditto ..	9/6
Portland	½"	Backing coat	4/4
Do.	½"	Plain face	7/8
Do.	¾"	Floor screed	4/8
Keenes	½"	Skimming coat	5/-
Dubbing	½"	Thick or less	2/2
Metal lathing	½"	mesh × 24 Gauge	5/8

6" × 6" × ¼" Earthenware Plain Glazed Tiles, in fair quantity, white, and setting (on prepared screed) .. 39/-
Rounded edge. Extra over last .. 4d. per foot run.
Angles in ditto .. .. .. 4d. each
Cutting and fitting. Around pipes or clips 1/- ditto
Narrow widths. 3" to 6" wide. Add 75% to plain surface.
Ditto. 6" to 12" ditto. Add 40% to plain surface.
Sundry labours per foot lineal:—
Quirk 2½d. Arris 3½d. Fair edge 2½d. Rounded edge 4d.
Flush bead 1/6.
Mouldings—5d. per inch girth.
Jointing new plastering to old 3d.

POLISHING	Foot super	Sashwork Foot run
NEW WORK—		
Staining, bodying-in and French Polish	2/8	1/8
Staining and wax polishing on hardwood	1/2	9d.
OLD WORK—		
Cleaning down old work and repolish ..	1/1	—
Stripping, preparing and repolishing ..	2/11	2/-

INTERNAL PAINTING

With white lead base in common colours, with brushes.

	Knot stop and prime	Prime and paint once	Prime and paint twice	Add for each extra coat	
ON WOOD—					
General surfaces ..	2/4	4/9	6/11	1/11	Yard super
Running lengths not exceeding 3" wide	3½d.	7d.	9½d.	2½d.	Yard run
Do. 3" to 6" wide ..	5d.	9½d.	1/2d.	4d.	do.
Do. 6" to 9" wide ..	7½d.	1/2½	1/10	6½d.	do.
Do. 9" to 12" wide ..	9½d.	1/6½	2/3½	7½d.	do.
Sash square each side	4/5	8/9	13/-	3/9	per doz.
Do. in large squares	6/-	12/3	18/-	5/3	do.
Opening edges ..	7d.	1/2	1/9	7d.	each
Casement frames each side	4½d.	8½d.	1/-	3d.	Yard run
Mullions or transoms, do. ..	6½d.	11½d.	1/3	4½d.	do.

ON PLASTER—	One coat	Two coats	Three coats	
Paint on surfaces	2/9	5/2	7/-	Per Yard super
Do. on mouldings	3/2	5/9	7/8	do.
Do. on enrichment	4/11	9/1	11/10	do.
ON STEEL—				
Paint on structural steel ..	2/1	4/-	5/8	do.
Do. on roof trusses	3/6	6/10	9/4	do.
Do. on metal windows measured over all on both sides, divided into squares	3/3	5/6	7/9	do.
Do. divided into large squares	2/9	4/9	6/3	do
Do. divided into extra large squares	2/4	3/11	5/3	do.
Do. on opening edges ..	10d.	1/6	2/-	each
Do. on rain water pipe ..	10d.	1/7	2/1	Yard run
Do. on do. gutter	1/3	2/8	3/7	do.
Do. on small pipe	3d.	6d.	10d.	do.

GLAZING (to New Work)

Polished Plate Glass ordinary substance (about ¼in), glazing quality, in the following sizes, glazed complete—Per foot super

In plates not exceeding	2 feet super	in each ..		5/5½
Do.	5 feet	do.	..	6/3½
Do. (unless extra sizes)	45 feet	do.	..	7/1
Do. (unless extra sizes)	100 feet	do.	..	7/4

Add extra price for glazing with screw beads or clips 5d. per foot super.
Do. if glazing bedded in washleather or velvet 9d. per foot run.

SHEET GLASS, glazed, complete, per foot super, in new work:
Ordinary quality clear, glazed to wood with putty :—

24 oz as described		1/2½
26 oz do.		1/5½
32 oz do.		1/9
¼ figured rolled and Cathedral, glazed to wood with putty	Per foot super	1/4½
Do. in standard tints	do.	2/0½
21 oz Fluted, glazed do.	do.	1/9½
¼in Reeded (narrow, broad, etc.) do.	do.	1/9
Reedlyte do.	do.	1/9
Spotlyte do.	do.	1/9
¼in Rough cast do.	do.	1/7½
¼in Do. wired do.	do.	1/10
¼in Georgian Rough Cast do. ..	do.	1/10½

Add for glazing all as before but to steel to similar work as above, 1½d. per superficial foot.

PAINTER AND DECORATOR

DISTEMPERING—In common colours, put on with brushes—ON PREPARED SURFACE.

per yard super—	1 coat (finish)	2 coats (undercoat and finish)	*Add* if required for Sealing coat	*Add* if required for Stippling
Ordinary distemper on flat surface of plaster	8½d.	1/4	6d.	3d.
Washable do. on do. of plaster	11½d.	1/9	6d.	3d.
Add if in margins, narrow widths or panels	30%	30%	20%	50%
Add if on mouldings	50%	50%	45%	—
Add if on enrichments ..	160%	160%	115%	—

PAPERHANGING

Hanging only—	Per Piece— Lining	Pattern
On walls	6/10	8/2
On stairs	9/4	10/10
On ceilings	8/2	9/7

MARLEY

YEOMAN TILES

Quickly and easily laid

Light in weight

Economise timber

TECHNICAL DATA							
Gauge	Lap	No. of Tiles		Feet Run of Batten		Approx. Weight of Tiling in lb.	
		per sq.	per sq. yard	per sq.	per sq. yard	per sq.	per sq. yard
13¼"	3"	92.5	8.3	90	8.1	1,000	90
12¼"	4"	100	9.0	98	8.8	1,100	99
11¼"	5"	109	9.8	107	9.6	1,200	108

Yeoman tiles have a variable gauge which should be utilised to avoid cutting tiles at top courses.

Send for full details and specifications.

All Marley tiles are surfaced with coloured mineral granules which ensure natural weathering and beauty. And all Marley tiles are covered by the Marley dual guarantee: (1) That Marley tiles will not laminate or decay for 50 years. (2) Free maintenance of roof tiling fixed by Marley craftsmen for ten years.

"Not for an age—but for all time"

The Marley Tile Company Ltd., Riverhead, Sevenoaks, Kent. Sevenoaks, 2251-6 **MARLEY**

Scotland: *Bishopbriggs* 1093 **Wales:** *Pencoed* 376 **Northern Ireland:** *Belfast* 24447 **Eire:** *Dublin* 51794

CONTRACT • NEWS •

Notes below give basic data of contracts open under locality and authority which are in bold type. References indicate: (a) type of work, (b) address for application. Where no town is stated in the address it is the same as the locality given in the heading, (c) deposit, (d) last date for application, (e) last date and time for submission of tenders. Full details of contracts marked ★ are given in the advertisement section.

OPEN

BUILDING

ALDRIDGE U.C. (a) Erection of Streetly Village Hall, Foley Road East, Streetly. (b) Messrs. Hickton, Madeley and Salt, Hatherton Road, Walsall. (c) 2gns. (e) June 27.

* * *

BARNSLEY B.C. (a) Maternity, child welfare and school health clinic, Athersley North Estate. (b) Borough Engineer, Town Hall. (c) 2gns. (e) June 22.

* * *

BRIGHTON B.C. (a) 25 dwellings in 2 blocks, Hollingdean Estate, section IG. (b) Borough Engineer, 26-30, King's Road. (c) 2gns. (e) June 28.

* * *

BRIGHTON B.C. (a) (Contract 1) 14 bungalows, Manor Paddock site; (Contract 2) 3 bungalows, Manor Green. (b) Borough Engineer, 26-30, King's Road. (c) 2gns. (e) June 28.

* * *

BRIGHTON B.C. (a) 20 dwellings in 1 block of 12 flats and 2 blocks of 4 flats, Site 15, junction of Birdham Road and Moulsecoomb Way. (b) Borough Engineer, 26-30, King's Road. (c) 2gns. (e) June 28.

* * *

BRISTOL E.C. (a) Adaptations to Elmfield school for the Deaf. (b) Messrs. W. S. Skinner and Sons, 27, Orchard Street, 1. (c) 2gns cheque payable to Corporation. (e) June 17.

* * *

CARMARTHENSHIRE C.C. (a) Erection of 3 superintendents' houses at Bronwydd Road, Carmarthen, 2 constables' houses with 1 office at Trimsaran, 2 constables' houses with office and 1 garage at Penybanc, Ammanford, 1 constable's house with office and garage at Llangendeirne, 1 constable's house with office and garage at Mydrim, 2 constables' houses with 1 office and 1 garage at Llandovery, 1 constable's house with office and garage at Llanybyther. (b) County Architect, County Hall, Carmarthen. (d) June 11. (e) July 9.

* * *

CHATHAM B.C. (a) Branch library, Walderslade. (b) Deputy Borough Engineer, Town Hall. (d) June 11.

* * *

COSFORD R.C. (a) Block of 4 flats at Brooksfield, Bildeston. (b) Mr. Edward Fincham, 9, Palmer's Avenue, Grays, Essex. (c) 2gns. (e) July 4.

* * *

CUMBERLAND C.C. (a) Erection of the first instalment of Thursby New Primary School. (b) John H. Haughan, 15, Portland Square, Carlisle. (e) June 17.

* * *

ESSEX C.C. (a) (1) Ambulance station, Gorsebrook Road, Dagenham; approx. cost £32,000; (2) ambulance station and control, Aldborough Road, Ilford; approx. cost £37,000. (b) County Architect, County Hall, Chelmsford. (d) June 18.

HAMBLEDON R.C. (a) 2 blocks of type "K" flats, Chapel Lane, Milford. (b) Council's Engineer, Council Offices, Bury Fields, Guildford. (c) 3gns. (e) June 22.

* * *

HUNTINGDON R.C. (a) 8 houses, Alconbury. (b) Mr. K. A. Milner, 4, Market Hill. (c) 2gns. (e) July 13.

* * *

LEEDS C.C. (a) Erection of (Section A) (Contract No. 638) 8 shops with dwellings over, and garages, at Summerfield Drive, Intake Lane Estate, area 1. (641) 4 shops with dwellings over, and garages at Tong Way, Tong Road. (642) 6 shops with dwellings over, and garages, at Whincover Drive, Cow Close Estate. (Section B) (639) 5 shops with dwellings over, and garages, at Silk Mill Drive, Tinshill Lane Estate, area 2. (640) 5 shops with dwellings over, and garages, at Kentmore Avenue, Beechwood, area 2, Seacroft Estate. (643) 8 shops with dwellings over, at South Parkway, Brooklands, area 1, Seacroft Estate. (644) 12 shops with dwellings over, and garages, at Cranmer Bank, Moortown Estate West. (b) City Architect, Priestley House, Quarry Hill, 9. (c) £1 each contract. (e) July 4.

* * *

LONDON—WALTHAMSTOW B.C. (a) Conversion of 8 houses in Carisbrooke Road into 31 old persons' flats. (b) Borough Architect, Town Hall, Forest Road, E.17. (c) 2gns. (e) June 17.

* * *

N. IRELAND—BELFAST C.C. (a) (1) 7 houses, Seaview Street and (2) construction of boundary walling and provision of gates at Disraeli Street. (b) Housing Architect, 94, Chichester Street. (c) (1) £5 and (2) £2. (e) June 21.

* * *

N. IRELAND—BELFAST C.C. (a) Extensions to the superstructure of the main buildings and the circulating water pumphouse at the Municipal Electric Power Station West. (b) Messrs. Merz and McLellan, Carliol House, Newcastle upon Tyne, 1. (c) 10gns. (e) July 7.

* * *

N. IRELAND—NORTHERN IRELAND HOSPITALS AUTHORITY. (a) Conversion of the fever hospital at Tower Hill Hospital, Armagh, to accommodation for nursing and domestic staff. (b) Mr. W. H. Johnston, 38, Abbey Street, Armagh. (c) 2gns. (e) June 17.

* * *

N. IRELAND — NORTHERN IRELAND HOUSING TRUST. (a) Demolition of a number of houses at Church Street, Keady, and the erection of 33 dwellings, together with engineering and ancillary works on the cleared site. (b) Northern Ireland Housing Trust, 12, Hope Street, Belfast. (c) £3. (e) June 22.

* * *

NORTH RIDING E.C. (a) Erection of new grammar and modern school at Thirsk. (b) Messrs. Leathart, Son and Tingay, 49, Welbeck Street, London, W.1, or F. Barraclough, County Hall, Northallerton. (e) June 28.

* * *

POOLE B.C. (a) Contract AW/1. 2 blocks of 4 flats, 7 pairs of houses, Alderney West Estate off Ringwood Road. (b) Borough Engineer, Municipal Buildings (c) 2gns. (e) June 23.

* * *

PORTSMOUTH C.C. (a) (1) 80 houses at Bedhampton Camp South, and (2) major repair of store at North End bus depot. (b) City Architect, 1, Western Parade. (c) £1. (d) June 18.

ROWLEY REGIS B.C. (a) 58 houses, Corngreaves Estate. (b) Borough Architect, Municipal Buildings, Old Hill. (c) 3gns. (e) June 27.

* * *

SAFFRON WALDEN R.C. (a) 28 houses and works, Frambury Lane, Newport, Essex. (b) Council's Clerk, Council Offices, Debden Road. (e) June 18.

* * *

SCOTLAND—KIRKCALDY CORPORATION. (a) Erection of an old folks' home at 163, Dunnikier Road. (b) Burgh Engineer, Town House. (e) July 1. (All trades.)

* * *

SCOTLAND—STEWARTY OF KIRKCUDBRIGHT C.C. (a) New junior school at Dalbeattie. (b) County Architect, County Offices, Kirkcudbright. (d) June 18.

* * *

SOUTH KESTEVEN R.C. (a) 6 dwelling houses at Pt. O.S. No. 171 Corby. (b) Mr. H. Parsons, 41, North Street, Bourne, Lincs. (c) 2gns. (e) June 22.

* * *

STRATFORD-UPON-AVON B.C. (a) 32 flats in blocks of 8 and 20 houses at Redlands Estate. (b) Borough Engineer, Municipal Offices, Rother Street. (c) 2gns. (d) June 14.

* * *

SUTTON AND CHEAM B.C. (a) Erection of 11 houses at Sutton Common Road, Sutton, and demolition of existing buildings. (b) Borough Engineer, Municipal Offices, High Street, Sutton. (c) 3gns. (d) June 15. (e) July 15.

* * *

WALSALL B.C. (a) 22 flats, St. Matthew's Close, Church Hill. (b) Mr. G. A. Jellicoe, 12, Gower Street, London, W.C.1. (c) 3gns. (e) June 30.

* * *

WANTAGE R.C. (a) 4 houses at Brightwalton and 10 houses at East Hanney. (b) Council's Clerk, Council Offices, Belmont. (c) 2gns. (e) June 18.

* * *

WEST SUSSEX C.C. (a) (1) Secondary school at Depot Road, Horsham, and (2) secondary school at Hill Road, Littlehampton. (c) County Architect, County Hall, Chichester. (d) June 22.

* * *

WILTS C.C. (a) Infants school at Penhill, Swindon. (b) Council's Clerk, County Hall, Trowbridge; together with details of available labour force, plant, organization and particulars of any similar work done. (d) June 15.

* * *

YEOVIL B.C. (a) Block of 12 flats and site works, Sunningdale Estate. (b) Messrs. Petter, Warren and Roydon Cooper, The Old Oxford Inn, West Hendford. (c) 2gns. (e) June 24.

PLACED

Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. †denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.

LAMBETH B.C. (1) 203 dwellings. (2) Opal Street. (3) Tersons, Ltd., 4, Dollis Park, Finchley, N.3. (4) £430,851.

* * *

HATFIELD R.D.C. (1) 91 houses. (2) Redhall Farm. (3) Alfred Robinson, Ltd., 29, Peterborough Road, Harrow. (4) £130,668.

NEWCASTLE ON TYNE CITY COUNCIL. (1) 852 three-storey flats. (2) Longbenton. (3) J. M. Black, Ltd., Back Glen Street, Hebburn, Co. Durham. (4) £1,249,823.

* * *

LONDON, S.E. (1) Printing Works for Whitehead Morris, Ltd., 78, Fleet Street, E.C.4. (2) Bankside, Southwark. (3) G. E. Wallis and Sons, Ltd., 231, Strand, London, W.C.2. (4) £135,000.

* * *

CHEADLE AND GATLEY U.D.C. (1) 187 houses. (2) Turves Road Estate. (3) Vessey Ltd., Stockport Road, Marple, Cheshire. (4) £239,437.

* * *

AYLESBURY. (1) Large factory for Negretti and Zambra, Ltd. (3) Higgs and Hill, Ltd., Crown Works, South Lambeth Road, London, S.W.8. (4) £150,000.

* * *

BUCKS. C.C. (1) College of Further Education. (2) Slough. (3) Taylor Woodrow Construction, Ltd., Ruislip Road, Southall, Middx. (4) £130,000 for first phase.

* * *

NORTHAMPTON B.C. (1) Second instalment of technical high school. (3) Robert Marriott, Ltd., Midland Works, Rushden, Northants. (4) £134,121.

* * *

OXFORDSHIRE C.C. (1) Fire station and ambulance depot. (2) Banbury. (3) W. and A. Collisson, Britannia Road, Banbury. (4) £51,766.

* * *

BIRMINGHAM. (1) Roman Catholic grammar school. (2) Acocks Green. (3) Turriff Construction Corporation, Ltd., Budbrooke Road, Warwick.

LANCASHIRE C.C. (1) County school. (2) Padgate. (3) Geo. Moss and Sons, Ltd., Leigh, Lancs. (4) £114,658. (1) Secondary school. (2) Knowsley. (3) Unit Construction Co., Ltd., Speke, Liverpool. (4) £[illegible]6,512. (1) Grammar school. (2) Worsley, and also day school, Worsley. (3) J. Jarvis and Sons, Ltd., 239, Vauxhall Bridge Road, London, S.W.1. (4) £155,060 and £39,200. (1) Secondary school. (2) Denton. (3) Geo. Moss and Sons, Ltd., Leigh, Lancs. (4) £118,122. (1) Albert Hamilton day school. (2) Huyton with Roby. (3) W. Hall and Son, Ltd., Liverpool. (4) £39,542.

* * *

DONCASTER B.C. (1) Technical high school. (3) W. Simpkin, Ltd., Sheffield. (4) £169,242.

* * *

CAMBERWELL. (1) Rebuilding the church, for Clubland Youth Centre. (2) Camberwell Road. (3) Richard Costain, Ltd., 111, Westminster Bridge Road, London, S.E.1. (4) £80,000.

* * *

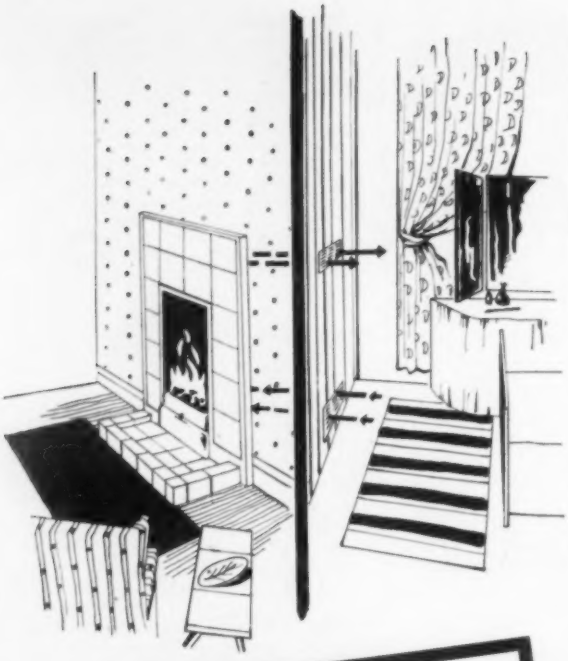
CHESHIRE C.C. (1) Secondary school. (2) Stanny Lane. (3) T. Warrington and Sons, Ltd., 82, Station Road, Ellesmere Port, Ches. (4) £132,650.

* * *

AYLESBURY. (1) Jam factory, for William Moorhouse and Sons, Ltd. (3) Webster and Cannon, Ltd., Cambridge Street, Aylesbury.

* * *

NORWICH. (1) Operation Theatre Suite. (2) Norfolk and Norwich Hospital. (3) W. S. Lusher and Son, School Lane, Sprowston, Norwich. (4) £55,694, first phase.



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LONDON WALL 6656

"NEOCAST" will flameproof up to standard required by Local Councils.

Cut to any shape or size ★

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OFFICIAL ANNOUNCEMENTS

APPOINTMENTS • CONTRACTS • TENDERS

Rate 1/6 per line, minimum 3/- *Close for press 1st post Monday for following Thursday Issue*

APPOINTMENTS

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

GEORGE WIMPEY & CO., LIMITED.

THE Arehitects' Department seek architectural staff enthusiastic to apply their knowledge to new construction techniques covering Houses, Multi-Storey Flats, Offices, Schools and Industrial Buildings for contracts in the U.K. and Overseas.

Appointments range from Architects to Draughtsmen with special interest to those of ability, recognising the value of the designer and technician as an integral part of the production team.

Appointments are on a permanent basis, 5 days a week at Head Office, Hammersmith.

For applicants interested in work in the Midlands, appointments are available in Birmingham Regional Office, carrying similar conditions with the exception that the working week is 5½ days.

Salaries will be according to qualifications and experience, and, subject to satisfactory service, there is a Pension scheme for those wishing to make a career with the firm.

Applicants should write giving brief particulars to E. V. Collins, A.R.I.B.A., Chief Architect, George Wimpey & Co., Ltd., 27, Hammersmith Grove, London, W.6. [9018

OFFICE OF THE RECEIVER FOR THE METROPOLITAN POLICE DISTRICT.

APPLICATIONS are invited for unestablished appointments as Architectural Assistants (New Works and Maintenance Branches) and also as Sanitary Engineering Assistants in the Chief Architect and Surveyor's Department.

Rates of Pay £442 10s (age 21) by annual increases to £695 (men) and £442 10s by annual increases to £615 (women). Overtime of approximately £24 per annum is also payable while a 45½-hour week is worked.

Conditioned hours 44 per week. Annual Leave 24 days.

Application forms from the Chief Clerk, Architect and Surveyor's Department, New Scotland Yard, S.W.1, stating for which drawing office application is made. [0958

GOVERNMENT OF WESTERN NIGERIA.

ARCHITECTS:
PUBLIC WORKS DEPARTMENT.

DUTIES include the preparation of sketch plans, working drawings and detailed specifications for various types of buildings and the carrying out of the general work of a very busy Architectural Office.

Appointments are either permanent and pensionable in the salary scale £910—£1,560 per annum; or on contract/gratuity terms in the scale £1,116—£1,898 per annum, plus a gratuity of £25—£37 10s for each completed period of three months' service payable on satisfactory completion of contract.

Free first class passages are granted for the officer and his wife and assistance up to £75 each for a maximum of two children is granted in respect of their passages or maintenance in the United Kingdom. Government quarters, if available, are provided at a rental of 10 per cent of basic salary. Leave is granted at rate of seven days for each month of resident service in a tour of 18-24 months.

Candidates should be A.R.I.B.A. with not less than two years post qualifying experience.

Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience and quoting reference number BCD 112/410/08. [1136

APPOINTMENTS—contd.

BOROUGH OF CHELTENHAM.

APPOINTMENT OF THREE
ARCHITECTURAL ASSISTANTS.

APPLICATIONS are invited for the following appointments on the Capital Works Establishment of the Borough Engineer's Department:—

(a) Two ARCHITECTURAL ASSISTANTS (salaries within Grade A.P.T. IV—£675 to £825 p.a.). Applicants must be Associate Members of the R.I.B.A. or equivalent, and experienced in the design of Public Buildings, Housing and Ancillary Buildings in connection with Estate Development.

(b) One ARCHITECTURAL ASSISTANT (salary within special Grade—£650 to £775 p.a.). Applicants must have passed Parts I and II of the R.I.B.A. Final Examination or its equivalent and must have had at least five years' experience, including the period spent in theoretical training.

The Council will assist in providing housing accommodation for the successful applicants in appointments (a) above, if required.

The appointments are subject to the National Conditions of Service; to the Superannuation Acts; and to a medical examination; and will be terminable by one month's notice on either side.

Applications, endorsed "Architectural Assistant," stating age, training, qualifications and experience; present and previous appointments; and giving the names of two referees, are to reach Mr. G. Gould Marsland, M.B.E., B.Sc., M.Inst.C.E., Borough Engineer, P.O. Box No. 12, Municipal Offices, Cheltenham, not later than Saturday, June 18, 1955.

F. D. LITTLEWOOD,
Town Clerk.
[1116

HAMMERSMITH.

(A) SENIOR ARCHITECT—A.P.T.5 £750/£30/£900 p.a., plus London weighting). Applicants should be A.R.I.B.A., with municipal experience. (B) ARCHITECTURAL ASSISTANT—A.P.T. 1/4 (£500-£825 p.a., plus London weighting) commencing salary according to qualifications and experience. Application forms, returnable by June 18, from Town Clerk, Town Hall, Hammersmith, W.6. [1123

BARNET URBAN DISTRICT COUNCIL.

ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited for the above appointment in the Engineer and Surveyor's Department (Grade A.P.T. II £560 to £640 p.a., plus London Weighting).

Applicants should have passed R.I.B.A. Intermediate examination, have had 3 years' practical experience and be able to prepare working drawings for Housing Schemes.

Appointment subject to N.J.C. conditions, Superannuation and medical examination.

Housing accommodation will be provided, if necessary, when available.

Applications, with full details, should be submitted to the Engineer & Surveyor, Ravenscroft House, Wood Street, Barnet, Herts., by June 22, 1955.

ALFRED S. MAYS,
Clerk of the Council.

Municipal Offices,
Wood Street,
Barnet, Herts.
May 24, 1955. [1109

COUNTY BOROUGH OF EAST HAM.

JUNIOR ASSISTANT PLANNING OFFICER—GRADE I—£500-£580.

LONDON Weighting is paid in addition. Salary in excess of the minimum may be paid according to qualifications and experience.

A subsistence allowance may be granted over a reasonable period to the person appointed if unable to obtain suitable housing accommodation, necessitating the maintenance of two homes.

Further details and application forms, returnable by June 24th, 1955, from the Town Clerk, Town Hall, East Ham, E.6. [1151

APPOINTMENTS—contd.

UNIVERSITY OF CAPE TOWN.

SOUTH AFRICA.

APPLICATIONS are invited for a post of STUDIO MASTER IN THE SCHOOL OF ARCHITECTURE.

The successful applicant must be a Member of the South African Institute of Architects (or eligible for membership), must be thoroughly experienced in architectural practice in all its branches, must be capable of taking charge of the studio work of any group of students from the first to the final years and must be able to lecture in some subject or part of some subject to be agreed upon. He will be required to devote an average of 25 hours per week to University work. Private practice is allowed, provided that it does not interfere with University duties.

The substantive salary scale offered to a Studio Master with some years of professional experience is £850×£50—£1,150 per annum. There is also a temporary cost of living allowance for a married man (at present £234 per annum). The salary scale recognised for the purpose of the Provident Fund is £800×£50—£1,050 per annum.

The successful applicant will be under the direct supervision of the Director of the School of Architecture.

Applications (with copies of testimonials) should state age, qualifications, teaching experience and practical or research work. Applicants should give the names of two referees whom the University may consult. Two copies of the application and testimonials should reach the Secretary, Association of Universities of the British Commonwealth, 36 Gordon Square, London, W.C.1 (from whom a memorandum giving the general conditions of appointment should be obtained) not later than 30th July, 1955. An additional copy should be sent direct by air mail to the Registrar, University of Cape Town, Private Bag, Rondebosch, Cape Town, South Africa, by the same date. [1156

ENGINEERING DRAUGHTSMEN
required by
LONDON ELECTRICITY BOARD.

APPLICANTS should have had a good general and technical education in electrical engineering and/or building construction. Knowledge of electrical plant layout an advantage. Vacancies in West Ham, Woolwich, Hampstead, City and West End districts. Superannuable appointments.

Commencing salary according to qualifications and experience within N.J.B. Grade 6—scale £535/£661 per annum inclusive.

Further details and application forms from Personnel Officer, 46-7, New Broad Street, London, E.C.2. Please enclose addressed envelope and quote ref. PER/V/1973/AA. [1130

GOVERNMENT OF SARAWAK.

ASSISTANT ARCHITECTS,
PUBLIC WORKS DEPARTMENT.

TWO ASSISTANT ARCHITECTS are required to assist with the Development building programme.

Appointments are on contract for 36 months' resident service at a salary of £1,400 per annum. Gratuity of £37 10s for each three months of resident service is payable on satisfactory completion of contract. Variable cost of living allowance payable to married officers.

Furnished quarters provided at a low rental. Free return passages for officer, his wife and up to three children. Leave is granted at the rate of four or five days for each month of resident service.

Candidates should be A.R.I.B.A. and have had at least five years' practical experience after qualifying. They should have a knowledge of the design of housing, hospitals, police and other public buildings. An aptitude for reinforced concrete design would be an advantage.

Apply in writing to the Director of Recruitment, Colonial Office, Great Smith Street, London, S.W.1, giving briefly age, qualifications and experience and quoting reference No. BCD 112/24/012. [1131

APPOINTMENTS—contd.

ROYAL TECHNICAL COLLEGE, GLASGOW.

(IN AFFILIATION WITH THE UNIVERSITY.)

RESIDENT ARCHITECT. Applications are invited for the post of RESIDENT ARCHITECT. The salary scale is £950—£50—£1,250. Candidates must be registered architects with experience both in the design and maintenance of buildings.

Particulars of the appointment and forms of application can be obtained from the Secretary-Treasurer, Royal Technical College, George Street, Glasgow, C.1. [1132

COUNTY BOROUGH OF WEST HAM.

BOROUGH ARCHITECT AND PLANNING OFFICER'S DEPARTMENT.

THERE are vacancies on the permanent staff for:—

(a) ASSISTANT ARCHITECTS (£675-£825 and £650-£775).

(b) ARCHITECTURAL ASSISTANTS (£500-£640).

Plus London Allowance.

For posts (a) applicants should be A.R.I.B.A., or Registered Architect; (b) Inter. standard with office experience.

Application forms and details from Borough Architect and Planning Officer, Thomas E. North, O.B.E., F.R.I.B.A., Dist. T.P., 70, West Ham Lane, Stratford, E.15 (returnable by 28th June, 1955). [1135

UNIVERSITY OF SHEFFIELD.

ENGINEER/SURVEYOR suitably qualified to supervise all maintenance in connection with the University buildings, services and plant.

Must be good disciplinarian, capable of controlling the various categories of personnel associated with this class of work.

Initial salary £800-£1,000, in accordance with qualifications and experience, with superannuation benefits and family allowances. A period of probation may be required.

Further particulars can be obtained from the Bursar, The University, Sheffield, 10, to whom applications (4 copies), giving names of two referees, should be sent by 20th June, 1955. Candidates who applied for the post of Maintenance Officer recently advertised need only notify by letter to the Bursar their wish to be considered. [1146

ST. THOMAS' HOSPITAL, LONDON, S.E.1.

DRAUGHTSMAN for Works Department. Plans of new buildings and maintenance work. Specifications and quantities. Commencing salary at 21 or over £380 p.a., rising to £570, plus London Weighting. Apply Personnel Officer. [1144

ARCHITECTURAL DRAUGHTSMAN who would also act as Technical Assistant to Laboratory Supervising Engineer on Construction, Maintenance, etc., required for Research Laboratory in PLEASANT RURAL SURROUNDINGS NEAR READING

Salary in accordance with qualifications and experience

5-day week Pension Scheme

Apply in writing with full particulars of training and experience to Personnel Officer

ASSOCIATED ELECTRICAL INDUSTRIES LIMITED

Research Laboratory

Aldermaston Court, Aldermaston, Berks. [1129

BASILDON DEVELOPMENT CORPORATION.

DEPARTMENT OF ARCHITECTURE AND PLANNING.

APPLICATIONS are invited from holders of professional qualifications in architecture for the following superannuable appointments:—

(a) ARCHITECT—Grade III. Salary £975-£1,275 per annum. This Architect will take charge of a group in the Housing Section and must have considerable experience in contemporary house design, together with the preparation of working drawings and all stages of contract management to completion of final accounts.

(b) ASSISTANT ARCHITECTS—Grade IVa. Salary £715-£845 per annum. Applicants must have experience in the contemporary design of houses or medium and small factories. One vacancy exists in the Town Centre Group for an Assistant with ability in contemporary shop and office design. A house may be available.

Applications must be made on the special form (obtainable from the Chief Architect) to the General Manager, Gifford House, Basildon, Essex, by Thursday, 23rd June. [1143

APPOINTMENTS—contd.

BOROUGH OF HASLINGDEN.

APPOINTMENT OF ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited for the above appointment in the Engineer & Surveyor's Department at a salary in accordance with Grade A.P.T. II—commencing at £600 p.a. The appointment is superannuable, subject to the successful applicant passing a medical examination. Applicants should preferably have had municipal experience in housing and general architectural work and preference will be given to persons holding part appropriate professional qualifications. Applications, stating age, marital state, qualifications and experience, with names of two referees, should be forwarded to the undersigned so as to be received by him not later than Thursday, June 30th, 1955. Applicants must state whether or not they are related to any member of the Haslingden Council or to any of the Council's Chief Officials. Canvassing in any form will disqualify. Housing accommodation may be provided, if required.

L. M. BURTON,
Town Clerk.

Municipal Offices,
Haslingden, Rossendale, Lancs. [1147

EXMOUTH URBAN DISTRICT COUNCIL.

APPOINTMENT OF ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited for the appointment of an Architectural Assistant who will be primarily engaged upon Capital Works, at a salary of £650 per annum rising by annual increments of £25, to a maximum of £775 per annum.

The appointment will be subject to the provisions of the Local Government Superannuation Act, 1937, and the National Scheme of Conditions of Service to the satisfactory passing of a medical examination, and to one month's notice on either side.

Applicants are required to have passed the final Examination of the Royal Institute of British Architects and to have had at least five years experience.

Housing accommodation will be available.

Applications accompanied by three recent references must be delivered to the undersigned not later than June 25th, 1955.

R. S. RAINFORD,
Clerk and Solicitor.

Council Offices,
Exmouth. [1148

COUNTY BOROUGH OF ST. HELENS.

BOROUGH ENGINEER'S DEPARTMENT.

APPLICATIONS are invited for the following appointments on the permanent establishment:—

(a) ARCHITECTURAL ASSISTANT, Special Scale (£650-£775).

(b) JUNIOR ARCHITECTURAL ASSISTANT, A.P.T. Grade I (£500-£580).

The appointments will be subject to the Local Government Superannuation Acts, medical examination, N.J.C. service conditions and will be terminable by one month's notice.

Candidates must, when making application, disclose in writing whether to their knowledge they are related to any member of the Council or to a holder of any senior office under the Council.

Applications, stating age, qualifications, past and present appointments and details of experience, accompanied by copies of three recent testimonials, must be forwarded to M. Ward, M.I.Mun.E., A.M.T.P.I., Borough Engineer, Town Hall, St. Helens, not later than Friday, 17th June, 1955.

Canvassing in any form will be deemed a disqualification. [1154

BOROUGH OF BASINGSTOKE.

BOROUGH ARCHITECT'S DEPARTMENT.

APPLICATIONS are invited for the appointment of an Architectural Assistant A.P.T. Grade II (£560-£640).

Applicants should have reached the standard of the Intermediate Examination of the R.I.B.A.

The appointment will be subject to the provisions of the Local Government Superannuation Acts 1937 to 1953, and to the National Conditions of Service and the successful candidate will be required to pass a medical examination.

Applications stating age, qualifications and giving details of education and experience together with copies of two recent testimonials, and to be submitted to the Borough Architect (Eric Almond, Dipl. Arch., A.R.I.B.A.), Municipal Buildings, Basingstoke, not later than Thursday, June 23rd, 1955.

Candidates should state whether housing accommodation is required.

MEIRION O. JONES,
Town Clerk.

Municipal Buildings,
Basingstoke. [1152

APPOINTMENTS—contd.

BOROUGH OF DARTFORD.

ARCHITECTURAL ASSISTANT.

APPLICATIONS are invited for the appointment of ARCHITECTURAL ASSISTANT in the Borough Surveyor's Department, the salary to be in accordance with the National Joint Council's Scheme of Conditions of Service, Grade A.P.T. II (£560-£640).

Candidates should have passed the intermediate examination of the R.I.B.A.: experience in Local Authority Housing Work would be an advantage.

The Council will provide housing accommodation to married applicants, if required.

The appointment is subject to the Local Government Superannuation Acts, 1937 and 1953, and the successful candidate will be required to pass a medical examination.

Applications, stating age, training, qualifications, and experience of present and previous appointments, with copies of three recent testimonials, must be received by me not later than 17th June, 1955.

THOMAS ARMSTRONG,
Town Clerk.

Council Offices,
Dartford, Kent. [1133

MISCELLANEOUS SECTION

RATE : 1/6d. per line, minimum 3/-, average line 6 words. Each paragraph charged separately.

BOX NOS. add 2 words plus 1/- for registration and forwarding replies which should be addressed c/o, "The Architect & Building News," Dorset House, Stamford Street, London, S.E.1.

PRESS DAY Monday. Remittances payable to Iliffe & Sons Ltd., Dorset House, Stamford Street, London, S.E.1.

No responsibility accepted for errors.

ARCHITECTURAL APPOINTMENTS VACANT

The engagement of persons answering these advertisements must be made through the local office of the Ministry of Labour and National Service, etc., if the applicant is a man aged 18-64 or a woman aged 18-59 inclusive, unless he or she or the employer is excepted from the provisions of The Notification of Vacancies Order, 1952.

RAMSEY, MURRAY & WHITE have vacancies for—

(a) Qualified Architect with several years' office experience, especially on Industrial Buildings.

(b) Architectural Assistant, advanced student R.I.B.A. with at least twelve months' office experience.

(c) ARCHITECTURAL ASSISTANT, about intermediate standard, preferably with office experience.

Salary according to qualifications.—Apply 32, Wigmore St., London, W.1, or Telephone Welbeck 1409. [0984

ARCHITECT'S Assistants required (1 senior and 2 juniors) for West End office.—Write stating full particulars and salary required to Box 2085, c/o A. & B.N. [8819

ARCHITECTURAL assistant, intermediate approaching final, commercial and industrial work; large-scale contracts.—Watson, Johnson, Stokes, Victoria Square, Birmingham. [0024

SENIOR Assistant required in busy practice in West End. Age about 30 years, qualified, with several years' experience and capable of running contracts.—Box 3851, c/o A. & B.N. [0636

TWO Architectural Assistants required, inter. standard, for contemporary office, salary according to experience.—C. H. Elsom, F.R.I.B.A., 44, Catherine Place, S.W.1. Victoria 4304. [1083

JUNIOR and intermediate architectural assistants required urgently in London office with widely varied practice; good salaries; 5-day week.—Lewis Solomon, Son & Joseph, Hol. 5108 or 7082. [0934

GOLLINS, MELVIN, WARD & PARTNERS, 15, Manchester Sq., W.1, require senior and junior staff, competent working drawings essential; opportunity to work on contemporary buildings.—Write or Tel. Welbeck 9991. [1128

QUALIFIED architectural assistant required interested in contemporary store design, offices and factories; good prospects; write, stating experience and salary requirements.—Gaby Schreiber and Associates, 7, Hobart Place, London. [1137

ARCHITECTURAL APPOINTMENTS VACANT—contd.

ARCHITECT with experience required for large project overseas, a period to be spent in London office, salary £1,250 per annum and a period on the site, salary £2,500 per annum; write, stating age and experience.—Box 4420, c/o A. & B.N. [1140

ARCHITECTURAL Assistant required for office in the City of London; A.R.I.B.A., Inter. to Final standard; salary up to £700 per annum according to experience; application should be made in writing with full details.—Box 4390, c/o A. & B.N. [1126

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